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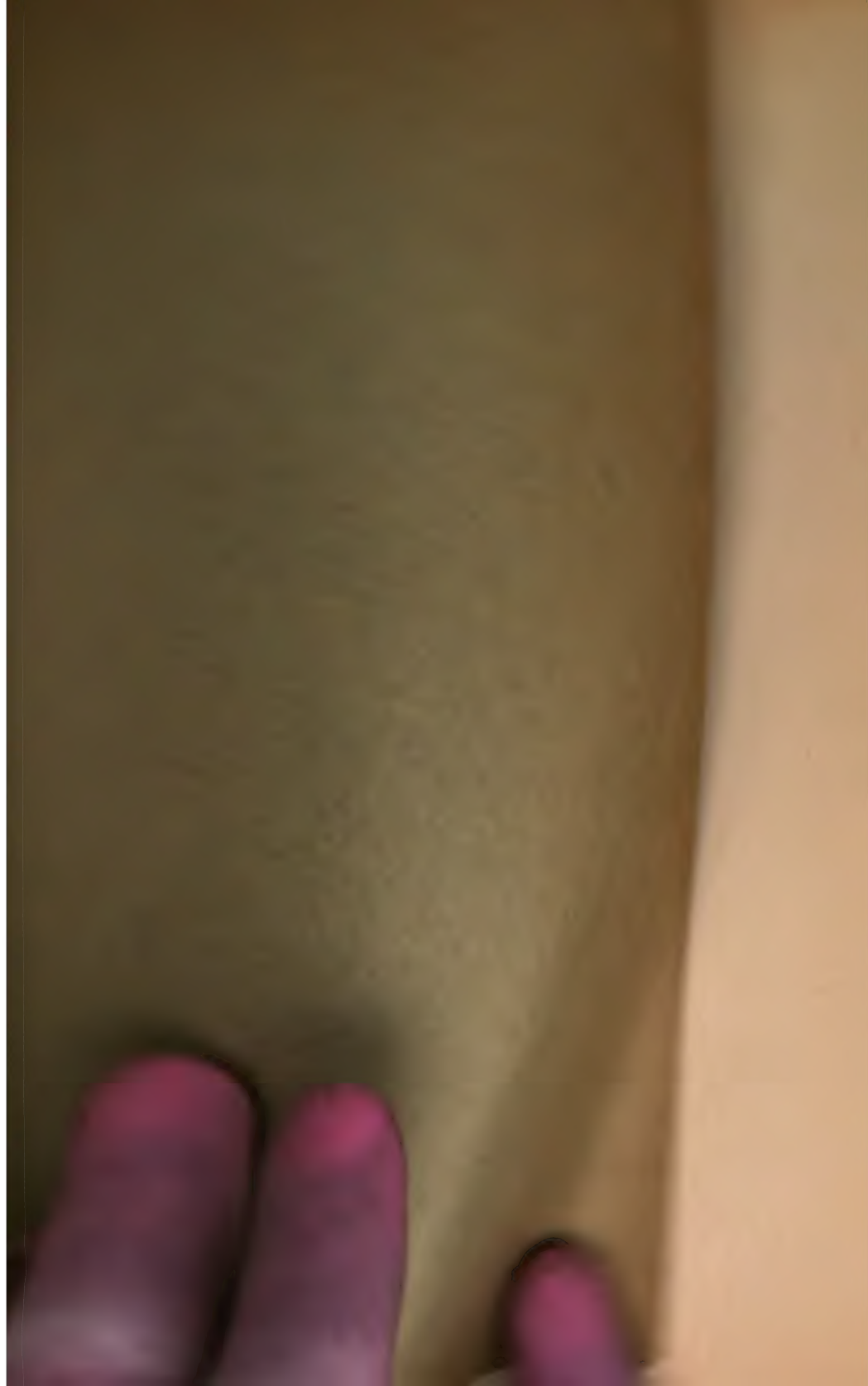
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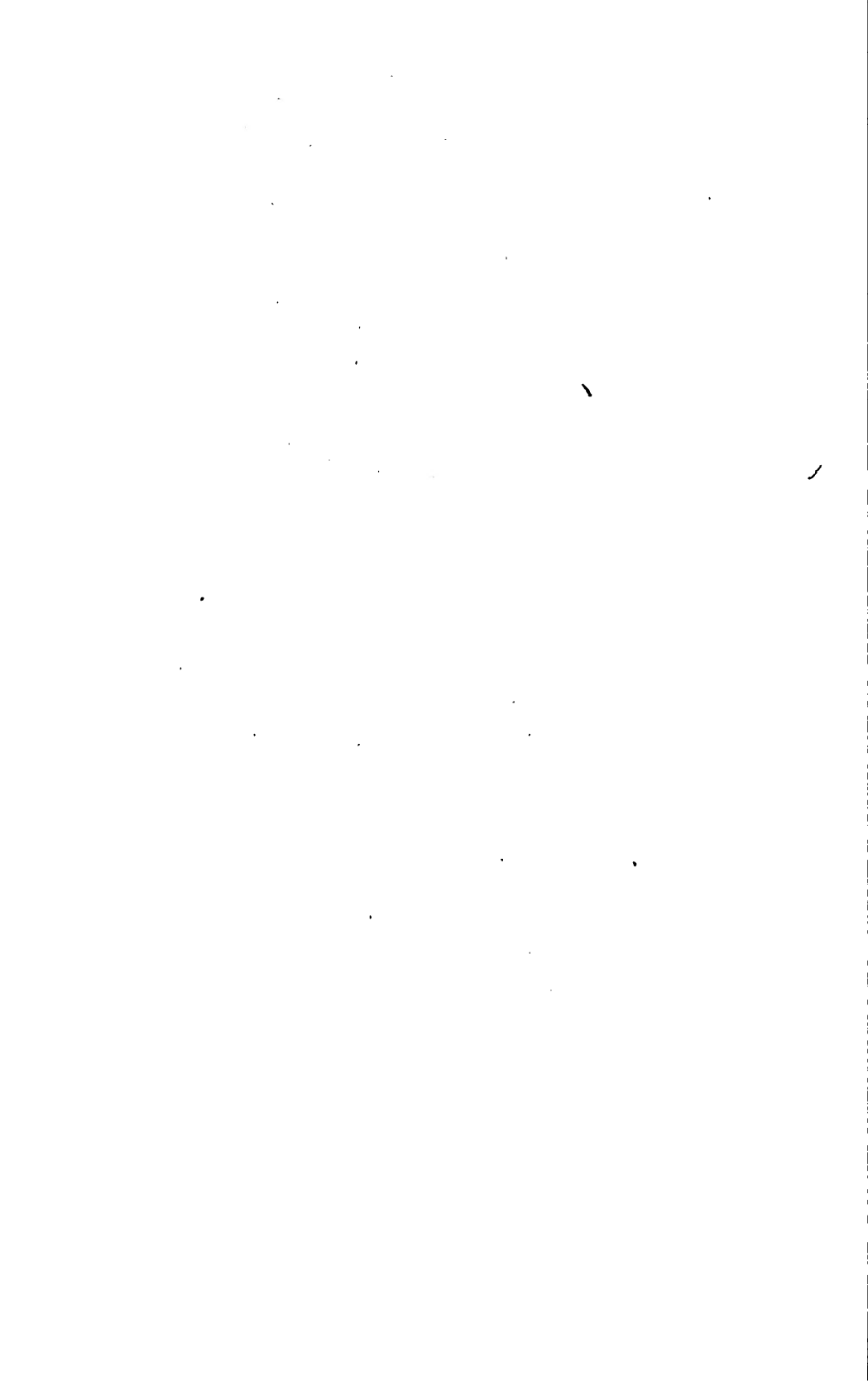
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EDITED BY
BROOKS H. WELLS, M.D.,
*Adjunct Professor of Gynecology, New York Polyclinic; Fellow of the New York
Academy of Medicine, the New York Obstetrical Society, etc.*

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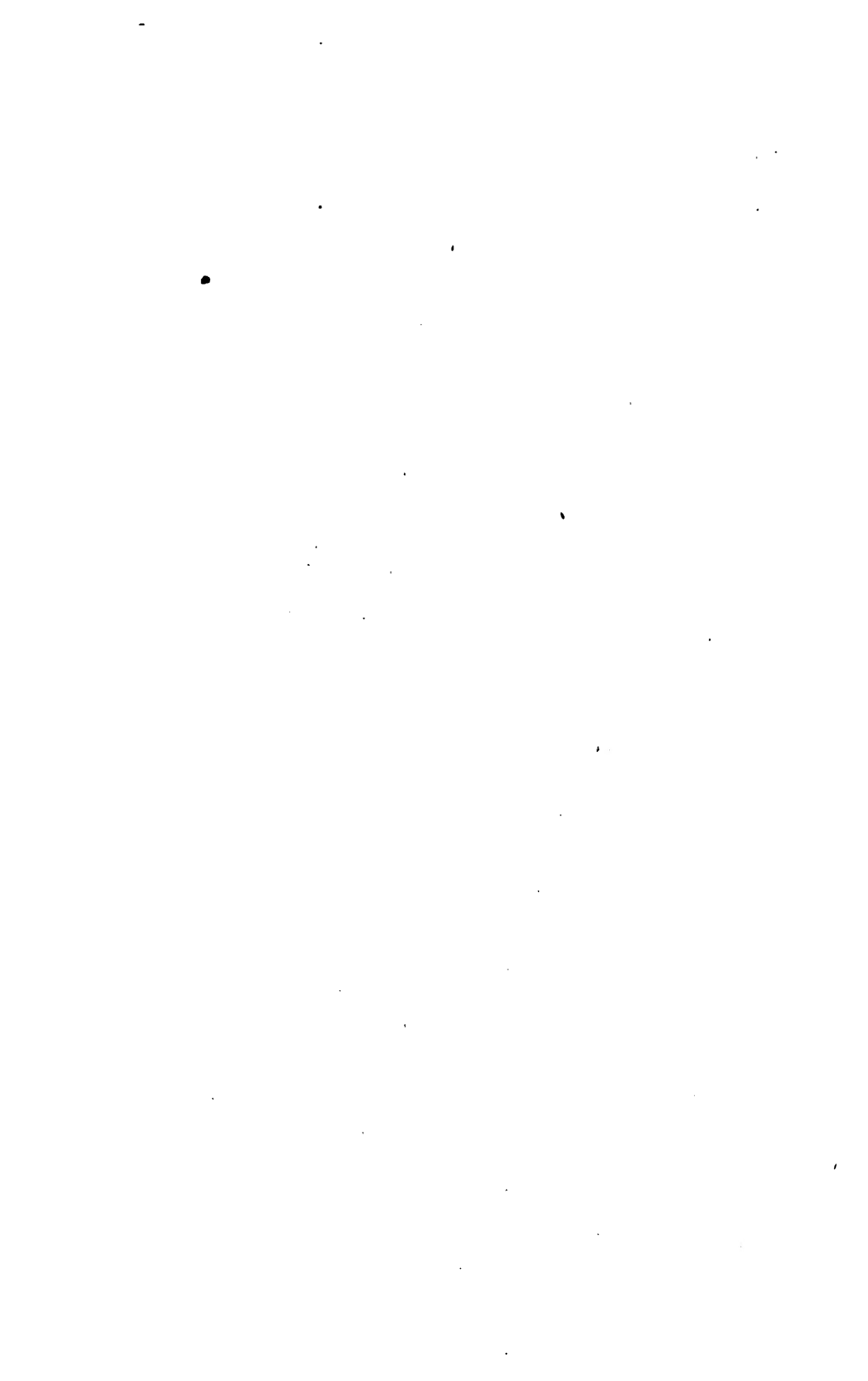
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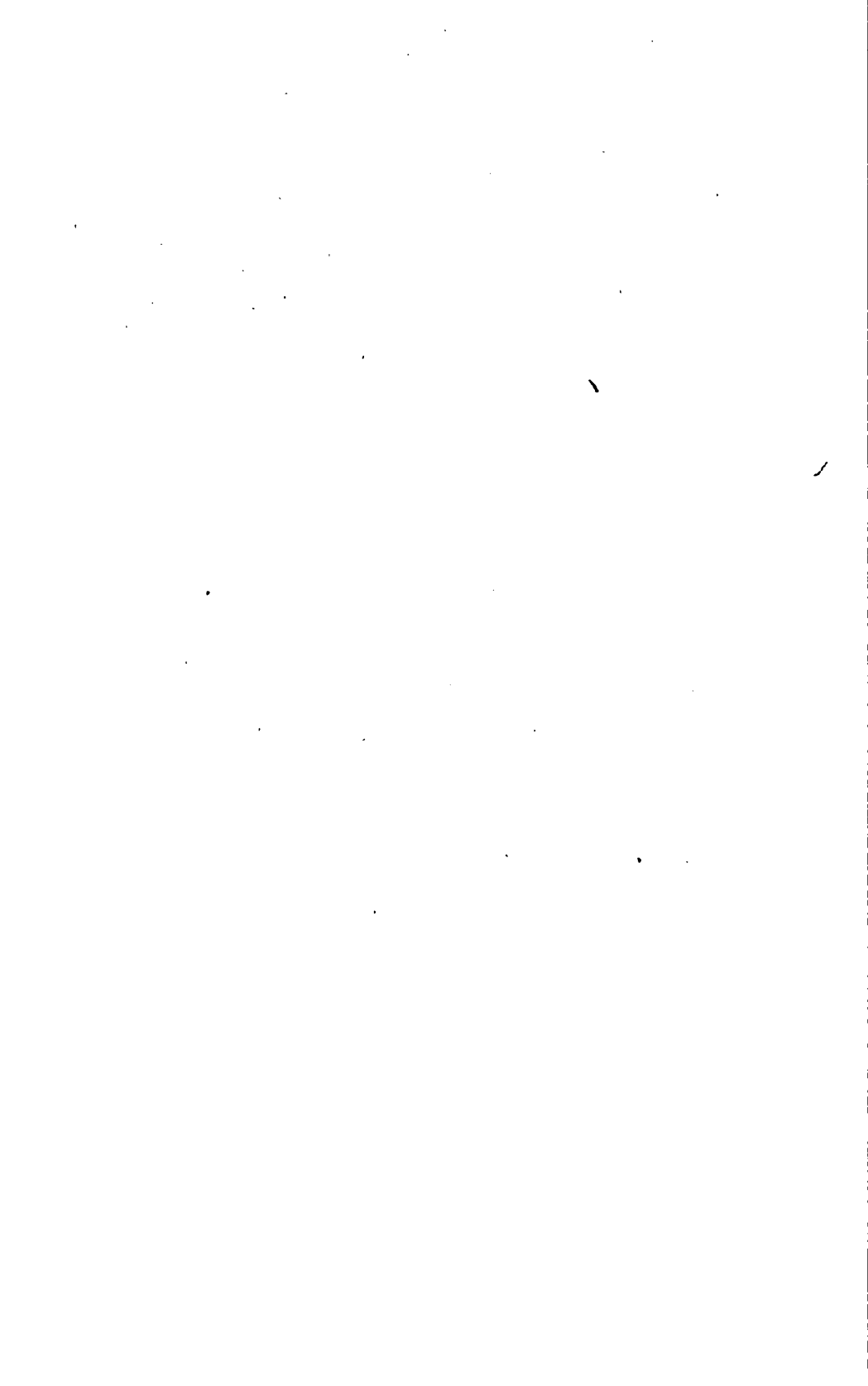
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and in the occipital region are the result of processes concerned in the development of the brain. According to Poirier, Entor, and others, the retroauricular dermoids stand in embryological relation to the union of the two parts forming the processus mastoideus—*i.e.*, the mastoid portion and the petrous portion. These dermoids are cysts whose inner wall, like the skin, consists of epidermis, corium, sebaceous glands, hair follicles, and sweat glands. The contents are composed of a fatty white or yellow, greasy mass containing hair and often cartilage and bone. These are composed, therefore, not alone of ectodermal but also of mesodermal tissues.

Dermoids are found likewise in the cranial cavity between the occipital bone and the dura. For unknown reasons epidermis cells make their way into the mesoderm. Calcification occurs several weeks after the union of the soft primary skull. Meanwhile the mesoderm has increased greatly in thickness, and on its inner surface the meninges, including the dura, have become differentiated. In this way, after ossification of the mesoderm, the resulting bone lies upon those ectoderm cells dating from the earliest embryological period, and the subsequent products of these cells lie between the dura and the bone. These ectoderm cells can likewise find their way to the base of the fourth ventricle and give rise to dermoids in that region (Kollmann).

Dermoid cysts are also found at the root of the tongue, originating from the so-called ductus excretorius linguæ or from fistulæ of the branchial clefts.

Dermoids appear likewise in the orbit behind the eye, those upon the bulbus being naturally visible on examination. The dermoid cysts of the orbit are observed rather frequently. Graefe found, among 73 cases, 39 which, without doubt, may be characterized as real dermoid cysts because of their contents, in that 1 contained a tooth, 2 contained calcium concretions, 6 hair, 19 epithelial—*i.e.*, epidermal—cells, fat in fluid form or as fat crystals or as a tenacious, honeylike mass. Of these, 38 per cent were congenital and 35 per cent were observed between the ages of 9 and 19 years. Graefe explains these as fetal products resulting from an infolding of the external embryonal layer. Weigert described a case containing cartilage, bone, glandular structures, and "intestine-like tubes," likewise epidermis cells.

The median line of the palate may also be the seat of dermoid growths.

Cartilage appears sometimes in the region of the middle and the lowest branchial arch, and originates from the growth of displaced cartilage cells. The deeply-situated epithelial carcinomata of the neck result from detached epithelial cells, especially from the fetal branchial arches, from detached thyroid lobes, or from displaced skin cells—*i.e.*, dermoids.

In the neck are found branchial cleft dermoids which, according to Schnitzler, are formed by an inversion of the epidermis in the region of the branchial folds. The inner surface has the structure of skin; the contents consist of epidermal cells and hair, sometimes also of bone, cartilage, and *teeth*.

Although rare, dermoids of the esophagus occur.

Dermoid cysts are found, further, near and behind the sternum. From the mediastinum these may grow into the lung. Büchner observed a dermoid cyst of the lung the size of a child's head; it communicated with the aorta. Dermoids of the mediastinum are indeed, as a rule, tumors which originate from such epithelial remains of the branchial cleft as descend into the anterior chest space during the further development of the thymus gland, itself a derivative of the branchial structures (Pflanz).

Harres published a case of a dermoid situated between the heart and the left lung; in its wall cartilage and bone were found.

Gordon found under the sternal end of the left clavicle a cyst filled with hair and cheesy matter; the cyst contained a bone resembling the superior maxilla, in which were seven *teeth* more or less firmly embedded. According to Wilms, Marchand found a cyst in the anterior upper mediastinum whose wall was partially calcified. This cyst contained cartilage, bone, cutis, and ciliated epithelium.

Wilms accepts for these cases the same explanation, as to their origin, which Pflanz put forth.

The cholesteatomata of the mamma are considered to be sometimes atheromata, sometimes dermoid cysts. The deeper subcutaneously situated atheromata result from detached embryonal cells containing sebaceous glands, or else they are real dermoids.

According to Gussenbauer, fistulæ and cysts containing skin and hair are not infrequently found in the sacral region, mostly in adults. They may be simple cysts, or multilocular, which, however, as a rule show no communication. These dermoids are found either exactly in the median line or very

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near it, in the region of the three last sacral vertebræ or near the coccyx. Although they are the result of an irregular embryonal process—i.e., a fetal inclusion of ectoderm—yet they do not manifest themselves at birth and rarely during childhood or puberty. In most cases they come under observation after the completion of body growth. The tumor, as a rule, reaches no decided dimensions, and for that reason escapes observation so long as no inflammatory symptoms arise; yet cases occur where the tumor becomes noticeable because of its size. Then they may be easily recognized as cysts with thick, cheesy contents. These cysts are rarely connected with the bone.

In the sacral region, according to Tillmanns, are found cystic formations containing cartilage, bone, "rudimentary intestine," brain tissue, nerves, muscle, glandular structures, etc. Although he considers some of these to be "parasitical double formations," "fetus in fetu," Tillmanns acknowledges that in other cases the various tissue forms found in the tumor are to be considered as resulting from detached cells, "inclusio fetalis." The congenital tumors in the sacral region have been divided by Nasse and Von Bergmann into (1) simple dermoids, (2) complicated dermoids, (3) teratomata, (4) cysto-sarcomata. These lie ventral or dorsal to the coccyx. The dorsal cysts of the sacro-coccygeal region, according to Mallory, are analogous to the malformations found in the branchial clefts. The ventral cysts, as we shall see later, are connected with changes in the caudal diverticulum, an embryonal rest of the intestine. Kümmel found in a congenital tumor in the sacral region a structure resembling the eye, which will be considered further on.

From this short review it may be seen that at the various points of union on the head, face, neck, mediastinum, spine, spinal cord, etc., as well as at all the other fetal furrows, clefts, and points of union, where, through disturbances of normal development, congenital malformations, fistulæ, and deformities may occur, also dermoid cysts may be found. These latter result through an infolding or detachment of cells often prominently ectodermal, but usually ectodermal and mesodermal. The cells may grow and develop (1) near their place of origin, or (2) far from their source of development, namely, dermoids between the skull and the dura, or mediastinal dermoids (theory of Pflanz). The displaced cells form the same tissues which they would have produced had they not been detached

from their normal location, cause likewise large tumors, and yet the normal development of the individual may be in nowise disturbed, or it may undergo various changes. It has been stated by many that such tumors, often very large, could not originate from displaced cells, for then the normal development would suffer by the loss of these cells and by the interference due to their presence. If, however, we consider that a fetus is developed in nine months from practically one cell, that from epithelial cells immense carcinomata result, and that in the ovary cyst-adenomata of immense size develop in a short time, we may then understand that not many cells removed from trophic control are needed to furnish eventually large growths.

In the above-mentioned regions appear highly complicated dermoids, for which the most diverse theories, without actual foundation, have been evolved; for instance, "double formation with subsequent union," "parasitical double formation," "fetus in fetu," "inclusio fetalis," etc. Nothing in pathology has created greater confusion than these various ideas, and it is only through an embryological study of the real mode of development of these dermoids that we can show the falsity of these theories. That double formations occur is not to be denied, since the medullary plates are capable each of producing an entity, and double formations are not rare events among fishes, etc.; but we need a sharp line of demarcation between these occurrences and those cases so generally explained as teratomata, double formations, and fetus in fetu.

I therefore quote a few complicated cases which illustrate these errors. Breslau and Rindfleisch described a fetus out of whose mouth there protruded a most easily movable tumor, the size of a man's fist, and attached to a pedicle (Fig. 1):

"The fetus showed relatively slight development of the cranial bones, wide sutures and fontanelles pointing to hydrocephalus. The brain was so soft that scarcely the crudest relations could be made out. The round pedicle of the tumor, measuring at the oral opening four lines in diameter, becomes thinner toward its base, so that in the region of the velum palatinum it measures only two lines. The uvula is attached to it from above. The serous covering of the pedicle takes on gradually the character of mucous membrane and goes on into the mucous covering of the posterior pharynx. The substance of the pedicle itself continues on to the basis cranii. We shall see directly how this pedicle passes through the base of the skull, and in this way furnishes the union of the external tumor with a second intracranial one."

"The intracranial tumor lay upon the floor or base of the skull, fastened by a band in the sella turcica. After removal of the operculum ephippii I convinced myself that the pituitary body failed entirely; the pedicle of this tumor disappeared, however, in a round hole in the floor of the sella (Fig. 3). The body of the sphenoid was entirely perforated; I have shown this spot from above in Fig. 3 with the dura mater removed. It may be observed that the ossification at this point is quite incomplete. Through this hole in the base of the sella the pedicles of the external and intracranial tumors connect with each other. A close examination of the inner tumor showed the presence in various parts of irregular horse-shoe-shaped structures. These were broadened at their point



FIG. 1.

FIG. 2.

FIG. 3.

to a three-cornered surface, and showed on the free edge of this surface a clear digitation, so that they reminded one immediately of deformed extremities. At one point four were observed, and as I studied more closely I obtained the view which I have given in Fig. 2. *Two black spots are the eyes; a transverse depression under these is the mouth; a number of communicating circles, which further down show through the thin covering, are the intestines; and the four prominences are the four extremities of a decidedly poorly developed fetus.* An umbilical cord is also present; the same runs from the highest point above the intestines toward the left, where it goes over into the thin covering of the tumor. This cover, then, must be considered to be the amnion, even though no other grounds for this supposition were found. It is there-

fore a fetus in fetu in the closest sense of the word—a fetus not content to be taken up under the skin of its autosite, but one *which has made its way into the skull of the other* (!). What, however, is of still greater interest and of greatest importance for a proper appreciation of this entire group is the presence of still more extremities; I count seven of them. Eyes are present at various points, so that there is no doubt that we must speak here of, not one, but of several fetus in fetu—*i. e.*, of a quite lawless and rich production of entire body organs. There is no doubt that this production goes out from the hypophysis—*i. e.*, that it was implanted on destruction of the hypophysis and in its place. Before I go on to further discussion of this condition, let us review the histological state of the remaining tumor mass. Cartilage, bone, muscle, nerves, and glandular substance are here present in a wonderful arabesque arrangement, embedded in fetal connective tissue. Here is a twisted horseshoe-shaped fragment of cartilage, there in the small depressions are found mucous glands without outlet; in another place is seen a muscle band passing through a piece of cartilage and turning again in a circle upon itself; in a third place are Malpighian capsules with kidney tubules grouped in the form of rosettes; certain large, dark-red masses consist mainly of coagulated blood, but one finds in them muscle and nerve fibres undergoing molecular degeneration—in short, it is, all in all, a histological potpourri. The epithelium of the oral cavity goes on as a squamous, non-stratified epithelium into the thin covering of the tumor protruding from the mouth.”

Beck quotes, in the *Zeitschrift für Heilkunde*, Bd. iv., 1883, many most interesting cases of this sort. He describes the following condition found by himself in a 74-year-old woman:

“In the sella turcica was found a tumor the size of a walnut, which formed a prominence toward the cranial cavity widened the sella turcica, and compressed greatly the chiasma nervorum opticorum lying above it. No part of the pituitary body was to be found. The tumor had a clearly alveolar form, showing in addition many spaces. These cavities contain partly a white, brittle, coagulated, mucus-like mass, partly more compact structures like cartilage. Other cavities were filled with a spongy, bone-like tissue; still others contained compact yellow masses, hard as bone, having the appearance of teeth. Their size varied from that of a pea to that of a kernel of maize; their number was large. From both surfaces of a median sagittal incision protruded fourteen *teeth*. The individual teeth, most of them of the form of bicuspidati, showed a white, shining, enamelled surface and a yellow, rough cement one.”

There follows a histological description of the tumor furnishing most interesting conditions. Beck continues then as follows:

"If, on the one hand, we are to classify this tumor from the anatomical and histological evidences, and, on the other hand, if we are to bring forward an explanation of its origin, then in the first place, according to the now existing views, there can be no objection to considering as a teratoid growth depending upon fetal malformation this tumor in the sella turcica, containing as it does cysts with colloid contents *teeth*, bone, and cavities lined with ciliated epithelium. To explain the origin of this teratoma several possibilities must be taken into consideration. In the first place, we may think of an *inclusio fetus in fetu*—i.e., an entirely individual twin, restrained in its development and enclosed in the skull of its autosite; or we may be dealing with a parasite form of partial embryonal cell division, a *duplicitas anterior* or *posterior*; finally, however, this growth may be considered as having originated from displaced cells of the fetus or of the hypophysis itself. An *inclusio fetus*, the enclosing of a fetus fully separated from the other in the sella turcica of the other, may be explained in two ways. The first view is that which Ahlfeld accepts in the case of *epignathi*, of teratoma in the sella turcica, and of teratoma of the cranial cavity inside of the dura mater. Two fetuses lie head against head very close to each other, on one blastula. If the one in a very early embryonal period, for some reason, is retarded in his development, he will gradually come nearer to the other growing fetus. At first situated near the anterior part of the amnion of the growing embryo, it soon reaches the anterior turning point of the head of the same, and, going along the turning point of the amnion, *comes into the neighborhood of the oral cavity, and then goes into the sella turcica, and even further into the brain, over the same road which the so-called hypophysis sac takes*, this sac, a protrusion of the ectoderm, being the structure from which the hypophysis develops. In this way, according to Ahlfeld, all *epignathi* may be explained: those situated anteriorly in the palate, those on the neck, even those attached to the sella turcica and those furnishing the largest number of brain teratomata. The second path which a fetus situated in the sella turcica of a second fetus may take is not that through the mouth, but through *the cephalic end of the medullary canal*, which Kölliker says remains open for a relatively long period (!). The fetus makes its way then to the seat of the pituitary body, so that it finally lies in the infundibulum, an outgrowth of the hypophysis. It is of advantage, in deciding which of the above-mentioned modes of origin will explain the presence of the tumor in question, to compare the same with other teratomata in the sella turcica. It must be stated that the other teratomata contained complicated but genuine fetal organs, and that in addition other malformations were present, such as cleft palate, persistence of the sphenoidal canal, and disturbances in the development of the base of the skull and of the brain, none of which failures are present in our case. The structure of this tumor is rela-

tively uncomplicated; it lies almost entirely in the sella turcica. No other malformations were seen in the patient. These facts speak against a fetal inclusion or partial parasitical cell division, and the structure of the tumor makes another explanation more probable. As we see that in our case the epithelium as well as the connective tissue has taken on an abnormal character in its growth, in that they have produced teeth and real bone, it is natural to believe that a part of the anterior lobe of the hypophysis, after its detachment from the pharynx, has preserved its ability, for some reason, to form teeth and bone. It must be mentioned here that that part of the oral mucous membrane from which the hypophysis is developed lies near the future seat of development of the posterior teeth of the upper jaw. Even the presence of ciliated epithelium in this tumor is not strange, since Peremeschko has shown that the canal which forms the hypophysis possesses *de norma* ciliated cylindrical epithelium. At any rate, the fact that in this case in various parts of the tumor pituitary tissue is present shows that the hypophysis has undergone teratoid growth only partially. At least there is the greatest probability that this teratoma is truly a teratoma of the hypophysis cerebri."

That Beck touched closely upon the correct explanation in his case may be seen from the following embryological review. It is also clear that this explanation covers all the cases quoted and discussed by him, as well as the case of Breslau and Rindfleisch. It would be remarkable to consider the tumor described by Beck the result of a displacement of cells, and yet view the other cases, even if they communicate with a palatal growth through the hypophysis canal, epignathi according to Ahlfeld, since in both classes the same tissue formations are present. It will be scarcely necessary to discuss further the fantasy of the theories of Ahlfeld and others. It is rather remarkable, at any rate, that such views could really have been accepted seriously—the idea that a fetus could make its way into the brain through a canal in the sella turcica or through the cranium to the base of the skull. At the same time we recognize the force of imagination which influenced those authors, for whom the idea of a fetus in fetu possessed a certain reality, to describe eyes, mouth, extremities, intestine, etc., as components of these growths.

The following illustration follows that given by Hertwig. To appreciate the beginning of the formation which results in the hypophysis, we may see in Fig. 4 that the oral cavity (*hp*) is separated from the cephalic portion of the primary alimentary canal (*kd*) by the pharyngeal membrane (*rh*). At the

upper end of the chorda dorsalis (*ch*) is the spot (*hp*) where a part of the pituitary body, a product of ectoderm, begins its development.

A small inversion of epithelium takes place which extends gradually toward the base of the cranium (*tr*, Fig. 5). This is the pocket of Rathke, or the hypophysis sac (*hy*, Fig. 5). This pocket deepens, begins to separate itself from its source of origin (ectoderm), and finally forms a cavity whose wall consists of several layers of cylindrical epithelium (Fig. 6, *hy*).

The hypophysis sac (*hy*) remains for a certain time connected with the oral cavity through a narrow canal (*hyg*, Fig. 6).

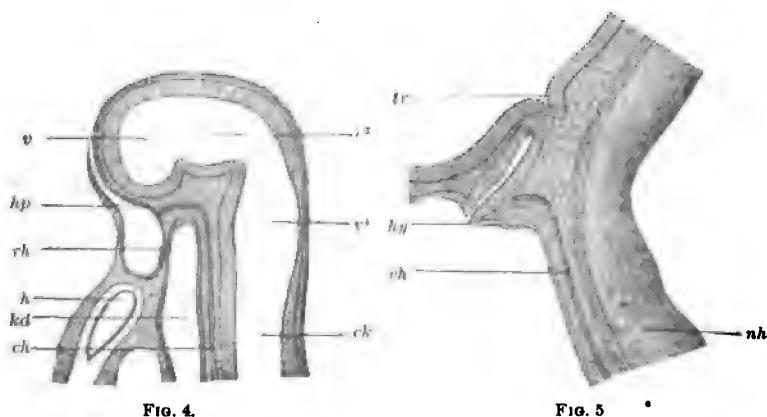


FIG. 4.

FIG. 5

FIG. 4.—Median section through the head of a 6-millimetre-long rabbit embryo. After Mihalkovics. *rh*, pharyngeal membrane; *hp*, spot from which the hypophysis develops; *kd*, primary alimentary canal; *ch*, chorda dorsalis; *v*, *v'*, brain ventricles; *ck*, central canal of the spinal cord.

FIG. 5.—Median sagittal section through the hypophysis of a 12-millimetre-long rabbit embryo. After Mihalkovics. Enlarged 50 ×. *tr*, base of the subsequent processus pinealis; *hy*, hypophysis sac, or pocket of Rathke.

At a later stage this connection ceases. The embryonal connective tissue (*schb*, Fig. 6) which furnishes the substance for the development of the cranial bones increases in thickness, and separates the sac still further from its source of origin (Figs. 6 and 7).

When finally in this connective tissue the development of cartilage takes place which eventually furnishes the cartilaginous base of the skull, this hypophysis sac (*hy*) lies above this base and on the under surface of the other lobe of the pituitary body (*tr*, Fig. 6). At this time also the hypophysis canal (*hyg*) has lost its lumen, shrinks, and begins to disappear

(Fig. 7). In many vertebrates this canal remains, and, passing through the cartilaginous base of the skull, communicates with the mucous membrane of the mouth.

Therefore we may see how ectodermal and mesodermal cells, displaced in the formation of the hypophysis canal and of the hypophysis, and likewise cells of the hypophysis itself, may, by independent growth, produce tumors which may lie in the sella turcica alone or may communicate through the hypophysis duct with a like tumor of the palate or oral cavity.

Kollmann says :

"A persistence of the hypophysis duct is occasionally observed. The pathological processes take place, with few ex-

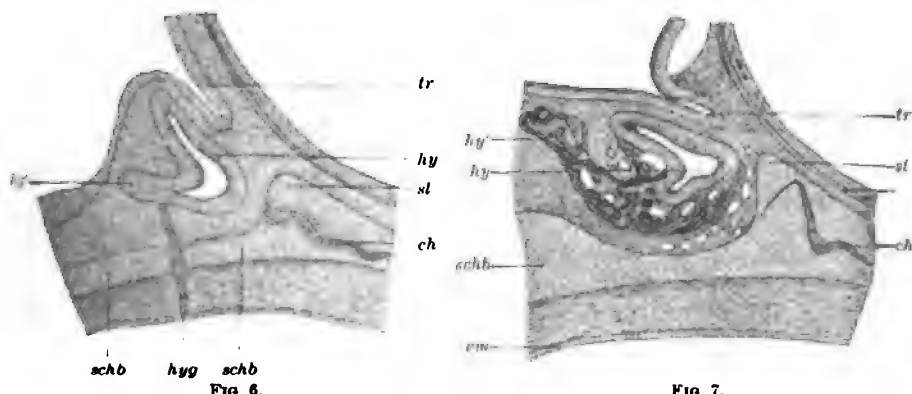


FIG. 6.—Sagittal section through the hypophysis of a rabbit embryo 20 millimetres long. Enlarged 55 \times . *hy*, hypophysis; *hy'*, part of hypophysis with beginning glandular formation; *hyg*, hypophysis duct; *ch*, chorda; *schb*, basis cranii.

FIG. 7.—Sagittal section through the hypophysis of a rabbit embryo 30 millimetres long. Enlarged 40 \times . After Mihalkovics. *tr*, infundibulum, or processus pinealis; *hy*, originally, hypophysis sac; *hy'*, glandular portion of hypophysis; *ch*, chorda; *schb*, cartilaginous basis cranii.

ceptions, in the anterior lobe of the pituitary body, and consist mostly of new growths. Considering its anatomical structure, this glandular portion of the hypophysis shows great resemblance to the glands thyreoidea; there is also a resemblance of remarkable character in some of the pathological processes occurring in these two organs. The most frequent tumor in the hypophysis consists of one or more cysts with gelatin-like colloid contents. Virchow calls this form of new growth *struma primitiva*."

We therefore see that the explanation which Beck suggested in his case applies as well to the more complicated cases in which the tumor of the sella turcica communicates with another by means of a pedicle perforating the basis cranii. That this communication takes place through the hypophysis duct is not

to be doubted. In addition it may be noted that the epithelium of the oral cavity in the case of Breslau was continuous with the covering of the pharyngeal tumor.

Further remarks about these cases are not necessary, and there is no need to more than observe the various complicated suggestions which Wilms has given concerning these tumors. He says :

"As to the mode of origin of the heteroblastic tumors, the dermoids and teratomata of the pharynx, of the basis cranii and in the cranium, we must consider: 1. The numerous cleft formations of the head and the processes of inversion in the formation of the mouth and the hypophysis give sufficient opportunity for displacement of cells. 2. Certain forms of the teratoid tumors may originate from a total double formation with subsequent union, or, 3, from a simple formation with partial doubling. 4. An inversion of the form of an inclusio fetus in fetu is, for certain cases in the literature, not to be rejected. Finally, 5, a blastic heteropy in tissues related in origin may possibly be considered. If, finally, we consider various of these processes to be combined, it is clear how difficult in individual cases is the question as to the origin of a teratoma in this region. And yet it is better to bring all these possibilities into the circle of observation, since only in this way can a thorough consideration of all questions be given."

To illustrate still further the errors concerning the question of "fetus in fetu," I quote the following case of Weigert's, reported under the name of "teratoma orbiti congenitum":

"This case presents a *real fetus*, in that the tumor contains cartilage, bone, epidermal elements, mucous gland cysts, intestine, and even bronchial structures. In a newly-born child was found a tumor the size of an orange protruding from the right orbit. On the summit of this tumor was the cornea, still transparent, but slightly clouded. The tumor with the eye upon it moves in harmony with the eye of the normal side. The tumor, after five days, was removed from the orbit with the adherent lids, and also with the nervus opticus which in a way formed its pedicle. At the autopsy the right orbit was found to be decidedly larger than the left; the surface of the bone, however, was quite smooth and intact. The brain was without any evidence of tumor growths; the extirpated mass had a pyramidal form. In spite of the puncture of one cyst at the operation, the mass was still the size of an apple. From the inner surface of the cysts stratified ciliated epithelium was scraped. The bulbus was of a size corresponding to the age of the child. Closely attached to the bulbus, but separated by loose connective tissue, were a number of cysts, of which the largest was punctured at operation. The others were of the size of a hazelnut to a walnut. The boundary of the cysts was furnished by a firm membrane; posteriorly the

cysts were surrounded by fatty tissue, in which ran the muscles of the eye, which muscles surrounded the large cysts. Many spaces were present, one of which was noticeable through its peculiar form, resembling intestine or a sausage, thin at one end, thickened at the other, and curved like a sling. Its surface is smooth and shiny, *like the intestine*; it is possible, in contrast to the other masses, to shell it out of its bed. On transverse section it has a star-shaped lumen, because of the protruding folds. These folds are not formed by the entire circumference of the tumor, but only by the membrane which lines it, and which is connected with the external membrane by loose connective tissue. Close to this tube-like structure lie other spaces bounded by a firm but not sharply outlined wall. In the fatty tissue are also islands of firm connective tissue, cartilage, and bone. The first have the macroscopic appearance of hyaline cartilage. One of these cartilaginous and bony structures was likewise easily shelled out, and has an irregular long shape, which, with a certain fantasy, calls to mind an *extremity*.

“*Microscopical Examination.*—The greater part of the compact tissue consists of fatty and connective tissue. The embedded pieces of cartilage have the ordinary structure of hyaline cartilage. The bones are well developed; in the medullary spaces lie round cells; on the walls of the same are osteoblasts. Here and there in the connective tissue lie bundles of unstriated muscle fibres and diffusely scattered red-blood cells. Near these structures are real epithelial masses, partly in long tubes, partly in smaller or larger cystic spaces. The epithelial elements are of three forms. 1. Most rarely they appear in the form of stratified squamous epithelium, the lowest cells being round or cylindrical, the upper ones being large horny cells. The spaces lined with such cells form cysts not larger than a pea; their wall is either smooth or shows irregular papillary projections. The cavity itself is filled with concentrically arranged horny cells without nucleus, forming glistening pearls. A *second* form of cavity is lined with simple cylindrical epithelium which consists of high cells with the nucleus at the periphery; the protoplasm is transparent, the cells are separated by small lines. On the surface there lies often in the larger spaces a cloudy, transparent mucus; such cell masses rest upon a connective-tissue base, partly in long recesses with small lumen or in cystic spaces. They clothe also the above-mentioned tube-like structure, in which they lie, not in a simple layer upon the projecting folds, but forming very regular tubular depressions of the form of the *glands of Lieberkühn*. They rest upon a firm layer, external to which is a loose layer marked off in turn sharply from the external membrane. This external membrane consists of well-developed smooth muscle fibres divided into two layers, an internal circular and an incomplete longitudinal layer. In the connective-tissue stroma lie groups of lymphoid cells. The cysts of the *third* form are lined with a stratified ciliated

epithelium, the cells of which are distinguished from the above-mentioned cylindrical cells by the character of their protoplasm, which is not transparent, but slightly granular. In the smaller cysts of this form there is a connective-tissue base, which, however, is interrupted in spots by glandular structures possessing a cylindrical excretory duct and a round fundus. The ducts contain cells with slightly granular protoplasm. The fundus contains cylindrical cells which are pale and transparent. In the larger cysts there is a smooth connective-tissue wall lined with stratified ciliated epithelium."

It is scarcely necessary to call attention to the fantasy which led to calling this tumor behind the eye a "fetus in fetu," a case where the eye, the muscles of the eye, and the lids were completely formed. In connection therewith attention may be called to the fact that the author believed actual intestine and other body structures to be present. We must consider it as granted that ectodermal and mesodermal cells were detached from their normal situation in the complicated process through which the eye was formed, and also in the union of the various parts of which the orbit is composed. At the same time, during the embryonal period the connection between the orbit and the nose is a close one. These three forms of cysts are all of ectodermal origin: (1) The cysts lined with squamous epithelium. (2) Those containing cylindrical cells secreting mucus. These resemble quite decidedly salivary glands. The depressions resembling the glands of Lieberkühn are likewise of ectodermal origin, as we find them, for instance, in cyst-adenomata of the ovary. (3) The cysts lined with stratified ciliated epithelium originate likewise from ectoderm; we find such epithelium in the nose.

Dermoid cysts and teratomata are also found in the abdominal cavity. According to Wilms, Meckel described a tumor situated near the diaphragm which contained twenty-one pieces of bone, four *teeth*, hair, etc. Bonfigli described a pear-shaped tumor in a fold originating from the liver and the stomach. This tumor was 13 centimetres long, 4 centimetres wide, and 470 grammes in weight. It contained a real bone, in which two *teeth* were embedded, while nineteen others, among them eighteen molars, lay free in the cavity. The inner surface was covered with normal hairy cutis for an area of five square centimetres. Marchand describes in the *Breslauer Aerztliche Zeitschrift*, No. 21, the following tumor:

"We have here a tumor of the abdominal cavity of a man, a large teratoma or an inclusio fetalis, a fetus in fetu, therefore a

decided rarity. The tumor was an accidental discovery in the cadaver. It was found that the ureter was of normal length, and that the pelvis of the kidney on incision was entirely normal and in no way connected with the tumor. Only at one point, at the upper end of the kidney, which was slightly torn on removal, was the union with the tumor a very close one, while on the remaining surface of the kidney the capsule was easily peeled off, being firmly adherent only at the hilus on its anterior surface where it went over upon the tumor. The anterior surface of the tumor is somewhat rounded, and shows at its lower part a few rounded prominences, which proved to be translucent cysts tensely distended. The anterior surface is almost entirely covered with peritoneum; from above the tumor is covered by the tail of the pancreas, which is only lightly united to the tumor by connective tissue.

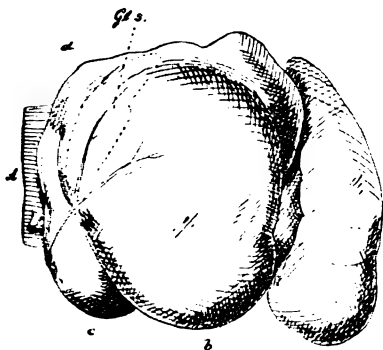


FIG. 8.

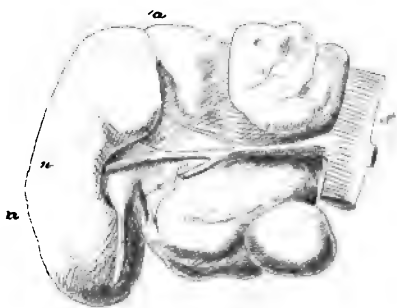


FIG. 9.

FIG. 8.—*A*, aorta; *n*, left kidney, united above to the tumor; *Gl.s.*, left suprarenal gland; *d*, upper end of the tubular cavity containing stones (intestine); *b*, cyst with ciliated epithelium; *c*, cyst with cerebral-like contents.

FIG. 9.—The posterior surface of the cyst, the surface connected with the posterior abdominal wall. *e*, large round mass of cartilage; *A*, aorta; *n*, kidney.

“At first the left suprarenal body could not be found; by careful dissection it was discovered flattened on the anterior surface of the tumor and under the serous covering. The posterior wall of the tumor is loosely united to the posterior abdominal wall, from which it is easily separated. In addition to the cysts also present here, there appears on the posterior surface a large, firm, round mass, which near the upper edge projects near the aorta, is partly covered by a non-adherent connective-tissue membrane and partly connected with a connective-tissue membrane which extends like a band over a few recesses. This mass consists of very firm, compact bone, and in its form resembles somewhat the calcaneus. Of special interest are the cysts. The largest, situated at the lower limit, contains a thick, cloudy, grayish fluid like the contents of an ovarian cyst. The inner surface of the cyst has the appearance of a white or pale-red mucous membrane; it shows

several large crescent-shaped folds, duplicatures of the mucous membrane, whereby several grooves and recesses are formed. The anterior surface of the wall is smooth; the deeper surface, on the contrary, shows a very fine, regular plaiting, traversed by several folds, giving thereby the impression of delicate plicæ palmatæ or of the corrugations of the vaginal mucous membrane. The recessus has several prolongations, ending blind at one point which looks like an obliterated ostium. At the opposite end there is a thick round canal, of the diameter of a knitting needle, which continues close under the cyst wall for a distance of one to two centimetres, running into a separate small cavity with a papillary wall of very soft consistence. Its entire inner surface is covered with well-preserved simple ciliated epithelium, consisting of short cylindrical cells with elongated nuclei. On incision two points in the immediate vicinity of this cyst wall attract attention. One consists of a firm gray mass the size of a bean, having the appearance of non-striated muscle and covered by the mucous membrane. By its side is a softer, spongy mass, mostly pale, partly containing blood, and having the appearance of cavernous tissue, which is found to be the case upon microscopical examination. The second cyst near the kidney, which contains stones, has the form of a long, closed tube, whose upper blind end projects along the kidney, while its lower end extends past the hilus. Its length is 10 centimetres, its circumference averages 6 centimetres. The wall of this cyst, containing in addition to the stones only a little cloudy fluid, has the character of mucous membrane, but is thicker and redder, its surface being traversed by numerous small vessels. On the median side of the tube there project several yellow bits of tissue and several polypous growths two to three millimetres thick and one-half centimetre long. This mucous membrane has absolutely *the character of the mucous lining of the large intestine*. The wall transversely incised (2 millimetres thick) has the appearance of a smooth muscle layer. The inner surface was covered with high, delicate cylinder epithelium without cilia. Seen from the surface, vessel groups are observed, between which here and there lie gland lumina with radially arranged cells. The character of the cyst as intestine is still more evident in stained transverse sections. Here were seen an external longitudinal and a stronger internal circular muscle layer. The mucous membrane itself showed numerous tubular gland-like depressions lined with distinct beaker cells. The stones which were found in this cavity are therefore analogous to *intestinal stones*; they were deposited from the secretion of the intestine during the existence of the thirty-three-year-old tumor—certainly a most remarkable fact. The stones, ten in number, have an angular tetra- or polyhedral form; their weight reaches 15.5 grammes. On the addition of HCl, gas is developed; they consist, therefore, in part of CaCO_3 , like the ordinary intestinal stones.

“Since we recognize beyond doubt this part of the tumor to

be rudimentary intestine, we may without error consider the neighboring cyst to be the rudiment of a genital formation. The resemblance of its inner surface to certain parts of the female genital mucous membrane has already been mentioned; on the other hand, certain facts speak against considering it a part of a female genital organ, although not much imagination is needed to consider the larger folds of mucous membrane to be *analoga of a hymen*, and to consider the grouping of smooth muscle fibres near the plicæ to be the *rudiment of a uterus*. A close examination of sections of this part showed with great clearness bundles of smooth muscle fibres radiating in all directions. These contain interspersed numerous branched tubular glands, corresponding exactly to those of the prostate. The cavernous tissue directly next to it demands no further explanation. At some distance from these parts, at the lower end of the intestine, there is still a round closed space the size of a cherry, and lined with a plaited muscular mucous membrane on which, however, epithelium is no longer found (*perhaps the mucous lining of the bladder*). A section in the neighborhood of the first-mentioned cyst shows two rather wide vessel lumina belonging to one and the same vessel. This proves to be a vein branching out in the tumor in various directions; it was impossible, in spite of all effort, to find its external opening. A large artery is not to be found on the surface of the tumor or in its structure. All the large branches of the renal artery were followed up to the kidney; no special branch of the aorta which could have supplied the tumor was to be found.

"Aside from both the above-mentioned parts, we are not in a position to recognize decided organs. Subsequently the second large cyst was opened, whereby an opalescent white fluid, and a thick, cheesy mass of the character of fetal brain tissue, were seen. The white substance consisted, microscopically, of closely-packed round and long nuclei embedded in a finely granular substance. The wall of this cyst had a shiny inner surface and was in certain parts connected with thin projections of a bony framework which formed part of the wall. In other parts were seen small yellow points which proved microscopically to be round calcium concretions. We are justified in considering this cyst to be the rudiment of a cranium with *dura mater* and nerve tissue. The cyst situated at the upper end is also lined with a like membrane which is, however, much more delicate, but which also is connected with the bone. In this cyst, which still showed several deep recesses, was found a white mass which on examination showed only a finely granular detritus. All these well-characterized forms permit of no doubt that we are indeed concerned with a rudimentary fetus in fetu—in fact, we may add, of the *male sex*, even though the absence of the generating glands permits of no absolute decision as to the sex.

"The decision as to whether we are dealing here with a female or a male formation is of special importance, since in

this case we are undoubtedly dealing with a double monstrosity—that form in which an embryo at a very early embryological period is taken up into the abdominal cavity of the other fetus, the so-called autosite, and there develops incompletely. It is a well-recognized law, to which as yet no exception has been observed, that double monstrosities are always of the same sex, and this case is therefore in line with this general law. In conclusion, it may be observed that the possessor of the tumor evidenced no annoyances during life; at least nothing was observed during his stay in the hospital.”

As will be seen later, we have in this tumor simply ectodermal and mesodermal products resulting from a displacement of cells. Marchand calls the larger folds of mucous membrane in this case analoga of the hymen; non-striated muscle in its neighborhood he considers to be a uterus rudiment; a closed cavity, the size of a cherry, lined with a plaited muscular mucous membrane, is viewed by him as the lining of the bladder; a cystic space containing numerous tubular, gland-like depressions lined with beaker cells and surrounded by muscle fibres, is called intestine, and the calcium concretions found among its contents, intestinal stones; a cavity near a bone and showing on its inner surface calcium concretions he considers to be the cranium. Certainly much imagination was used in reaching these conclusions. To prove the absolute fallacy of this view it is sufficient to call attention to the fact that this tumor lay *behind the peritoneum, behind the pancreas, and under the suprarenal body*. Even if a fetus could make its way into the abdominal cavity in a case of this sort, and there undergo further development, it would be just as impossible for it to occupy such a position as it is for those cases of Ahlfeld to pass through the mouth of a second fetus and make their way through the hypophysis duct into the cranial cavity. In this case of Marchand we have many so-called “intestine-like structures,” which, however, are nothing more than salivary-gland products, as we see them in cyst-adenomata of the ovary. Calcium concretions on the inner surface of such colloid cysts are not infrequently found. Weigert believed a piece of intestine to be present in his case, the more so because in the wall of this “intestine” he found muscle fibres arranged in two layers. It is a frequent occurrence to find in dermoid cysts in various parts of the body that muscle fibres are grouped in the circumference of a dilating cyst and that these fibres hypertrophy through this gradual dilatation. This process likewise takes place around the glands in adenomyomata of the uterus, as Von Recklinghausen has shown.

Wilms views these cases of Meckel, Bonfigli, and Marchand as follows:

"In permitting myself, in view of the short reports, to discuss the possibility of the entrance of such teratoid formations into the abdominal cavity, the following facts, in my opinion, must be taken into consideration: Meckel and Bonfigli found entire parts of the skeleton (?) and a number of teeth. This fact brings us close to the idea of an independent fetal formation. The entrance of such a fetus into the abdominal cavity may be viewed as a possibility when we consider those monstrosities which have been often reported as epigastrii. In these cases the region from the ensiform cartilage to the umbilicus has usually been given as the point of union. Both of the complicated teratomata were found high in the abdomen near the liver and the stomach, a region corresponding exactly to the above-mentioned points of growth. It seems to me, therefore, that we may rightly consider the teratomata of the abdominal cavity as analogous formations, and that we may grant them the name engastrii. The entire process involved in such a malformation would then be considered as a genuine *inclusio fetus in fetu*. Marchand accepts for his case likewise the theory of fetal inclusion, in spite of the fact that its location near the vertebræ, if we consider these tumors to be engastrii, cannot be easily explained in his case."

Wilms is right; not alone the case of Marchand, but also the cases of Meckel and Bonfigli, can be viewed as engastrii only with difficulty. They can, however, beyond doubt be explained embryologically as simply pure embryonal disturbances of development in the porteur. At any rate, we see that Wilms, although he cannot explain the situation of Marchand's tumor, nevertheless believes the continued growth of a fetus entering the abdominal cavity of another to be possible.

Before showing the fallacy of the theory of Marchand and Wilms concerning these cases by giving an embryological explanation of their origin, I would mention several other interesting cases. Zweifel reports a case in nowise connected with the ovary. This dermoid cyst showed even macroscopically the appearance of a skin covered with hair; microscopically it furnished typical pictures of this kind. Situated *retroperitoneally*, it reached from the diaphragm deep into the pelvis, whither it had pushed the kidney. It was 23 centimetres long, 17 centimetres wide, and contained over twenty-five pounds of greasy substance. Another case is mentioned by Bardenheuer, a *retroperitoneal* tumor which extended into the posterior surface of the liver, dislocated the colon ascendens externally and posteriorly, and was covered by the colon

transversum. The pancreas was closely united with the tumor—that is, was infiltrated by the tumor. Around the tumor lay the duodenum. This cyst contained *teeth*, hair, bone, etc. Pommer reported a case with the title, “Fetal inclusion in the omentum.” “The tumor lay above the symphysis, in the omentum, and united with the anterior abdominal wall, surrounded by the omentum as by a veil and fixed to the uterus by a strand of the thickness of a finger.” Since Pommer found in this tumor a “well-defined lower jaw formation” and an encapsulated *appendix*, and also pigmented cells like those of the retina, he does not doubt that in this tumor we have “the residua of an embryo implanted parasitically in a sister fetus—*i.e.*, a fetal inclusion.” Josef Mayer describes a round dermoid cyst, larger than a man’s head, connected with the mesentery of the colon on the right side by a short, thick pedicle six to seven centimetres in diameter. This pedicle of the cyst ran into a saucer-like depression in the mesentery. Augagneur mentions and describes dermoid cysts of the mesentery. König observed and operated a case of this sort.

Wilms, discussing the cysts of Zweifel and Bardenheuer, says:

“Bardenheuer describes a cystic tumor in a seventeen-year-old girl reaching from the liver to the true pelvis and occupying the entire lumbar region. The author does not discuss its origin. Zweifel operated an eighteen-year-old girl, finding a large tumor lined with hairy skin and reaching from the diaphragm to the pelvis, pushing the kidney before it.”

Thereby Wilms failed to observe that the cyst of Bardenheuer contained *teeth* and bone. Wilms says further:

“Both of these tumors, corresponding in location and structure, must not, in my opinion, be confounded with those retroperitoneal tumors situated in the pelvis. The fact that in Zweifel’s case the kidney was pushed down speaks for its origin and development above the kidney. Although neither Bardenheuer nor Zweifel attempted an explanation of the origin of these cysts, it does not seem difficult to bring these cases into relation with an embryological process. A fact which, according to our present embryological knowledge, may be of use is the ectoblastic development and origin of the Wolffian duct. In an article by Bonnet I find attention called to this view.”

This explanation approaches undoubtedly the correct one and explains the cases of Marchand, Pommer, Bonfigli, Meckel, Mayer, and others, although some of them possess a complicated structure. Since I believe that the following explanation will be accepted for all these cases, it is well to recall again

the stretch of imagination by which in these cases cranium, intestine, male sexual organs, prostate, inferior maxilla, retina, etc., were believed to have been present.

The situation and development of the Wolffian body and duct is as follows:

In Fig. 10 we see the situation of the "first kidney," or the Wolffian body. The canals of this body go from the Wolffian duct up to the celom, the future peritoneum. The Wolffian duct, the excretory duct of the first kidney, lies close to the ectoderm (Fig. 11).

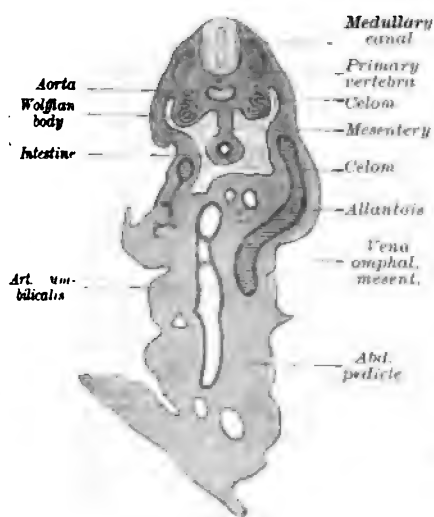


FIG. 10.

FIG. 10.—Human embryo, 5 millimetres long. After His. The section includes also the abdominal pedicle.

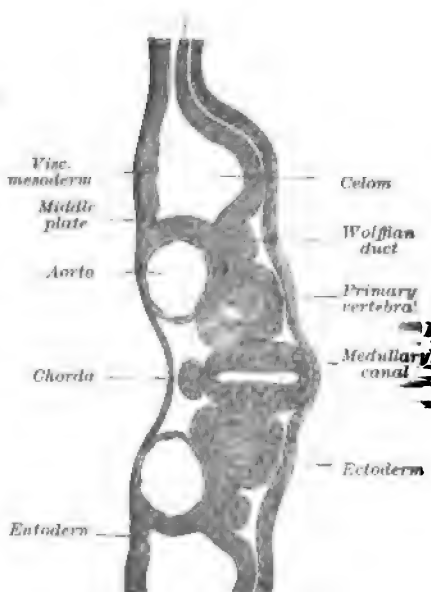


FIG. 11.

FIG. 11.—Bird embryo with four blastodermic layers, at the beginning of the third day. Transverse section.

Some authors, among them Spee, say that the Wolffian duct originates from the ectoderm, and we shall later prove this statement to be correct. Since the real kidney subsequently develops at this point, and since the Wolffian duct and the Wolffian body lie in the mesoderm, it is evident that ectodermal and mesodermal cells and also cells of this part of celom epithelium may be displaced from their normal situation and in this way furnish the source for the development of dermoids of varying complexity, exactly as Wilms has ex-

plained the origin of mixed tumors of the kidney through cells displaced by the Wolffian body. But the point of development of the "first kidney" is also near the primary intestinal mesentery, and the mesodermal cells in which the Wolffian body lies form at a later period the permanent mesentery. In this way displaced cells, just as they cause dermoids in the region of the kidney, may cause the same sort of tumors in the mesentery. In Fig. 12 we see the Wolffian body and the primary mesentery; and when we consider what great wanderings and changes of location the latter makes during the development of the intestine, and when we consider further that a part of this primary mesentery forms the omentum and that in this primary mesentery the liver, pancreas, and stomach are



FIG. 12.—Human embryo, 5 millimetres long. Sagittal section. Reconstruction. After His.

formed, we may then understand that it is only a question of chance in which of these situations those cells develop which have been displaced or carried into the primary mesentery.

It is therefore not necessary to consider such cases as occur in the omentum fetus in fetu or inclusio fetalis. In the case mentioned by Pommer, Wilms found it necessary to consider this tumor a dermoid cyst of the ovary, although at the operation it was plainly recognized as a teratoma of the omentum. Wilms adopted his explanation, since it harmonizes with his theory of parthenogenesis and the tumor was of no interest to him as an epignathus. Wilms¹ says concerning this case:

"The case of Pommer does not seem to me to be beyond

¹ Archiv. f. klinische Medicin, Band lv.

criticism as regards its explanation. In opposition to the author I consider it a dermoid cyst and not a teratoma. As fetal inclusion in the omentum Pommer describes a tumor of the size of a child's head which lay above the symphysis, was adherent to the anterior abdominal wall, and was only fixed to the uterus by a band. Even though in the referat in the *Centralblatt für Allgemeine Pathologie*, from which I quote this case, no further statements are made concerning the ovary, yet I venture to *consider this tumor as an ovarian dermoid cyst* (!) The structure of this tumor, which agrees so noticeably with other dermoid cysts of the ovary, justifies me, I believe, in forming this conclusion. So far as the advanced necrosis and the decided calcification of the wall permitted of examination, connective tissue, smooth and striated muscle were found to be the constituent structures of the capsule. Within, normal hairy skin was present as the lining membrane. The tumor was filled with a number of joint like structures covered with skin, which adhered to the capsule with broad surfaces and were united to each other by plaited membranes. These stump-like structures consisted chiefly of connective and fatty tissue in which were situated pieces of cartilage, bone, and voluntary muscle. One tissue area resembled the cartilage of Meckel with a bony lower maxilla formation. Of further interest was an area containing a profuse grouping of brown-black pigment granula in a tissue whose cells could be indistinctly recognized. *Possibly we have here, according to the judgment of the author, a rest of an eye formation.* Completely formed ragged teeth projected here and there, enclosed in tooth sacs, from the spaces between the stumps. A sac-like hollow structure with a perforated prolongation the author considers to be the cecum with the processus vermiformis. As already mentioned, he views this tumor as an individual formation parasitically implanted into a sister individual. Yet the entire structure of the cyst, as well as the pedicle continuing into the uterus, points in a distinct way to the fact that we are dealing here with an ovarian dermoid."

Since this description speaks for itself, I will not criticise further the standpoint of Wilms. I would recall the fact that the tumor of Bonfigli lay in a strand originating from the liver and from the stomach, and that the tumor of Meckel was situated at the diaphragm. Since these growths, according to our theory, are the result of displaced cells, for which displacement the Wolffian body is responsible, the following case is of decided interest. The genital gland (ovary or testicle) originates high up in the abdomen. We may therefore easily understand from the following description why the above-mentioned dermoid cysts were situated in this uppermost part of the abdominal cavity. Pommer described "A

Union of the Left Cryptorchic Testicle and the Epididymis with the Spleen in a Premature Fetus, together with Numerous Anomalies of Development." He says:

"The origin of this condition—a like case was not found noted in the literature—is certainly to be dated back to that period of embryonal development in which the anterior portion of the 'first kidney' and the Wolffian duct (later the head of the epididymis and the vas deferens) extend up to the region of the liver and are united to the diaphragm by the diaphragmatic band of the Wolffian body. Since the spleen develops in this region, a union between it and the cells of the subsequent epididymis may be taken for granted, even though a special cause for the same cannot be mentioned. During the descent of the testicle a band-like stretching of the adhesion occurred, and the testicle was retained in the abdominal cavity through tension of this band."

To illustrate this condition still further, and to show the importance of a displacement of cells and their future growth, and likewise to prove that cells of varying combinations may be displaced, I group together the following from Wilms' "The Mixed Tumors of the Kidney." The mixed tumors of the kidney which have been described as rhabdomyomata, chondrosarcomata, angiosarcomata, myxosarcomata, and sarcomata occur, as a rule, at a youthful period, mostly in children during the first three years. One case in a fetus has been described. These are situated mostly in the pelvis of the kidney or in the substance of the kidney, and grow into it as something foreign. In two cases they were situated outside of the capsule of the kidney, which speaks against their origin from the kidney tissue itself. In one case the colon lay behind the tumor. In addition to glandular structures are found smooth and striated muscle, cartilage, fat, elastic fibres, colloid and fibrous connective tissue, etc.

Eberth expressed the view that these mixed tumors originate from remains of the Wolffian body. Birch-Hirschfeld agrees with the theory that they originate from the Wolffian body. He seems to have reached this conclusion through his explanation of the glandular structures as Wolffian-body canals. Vogler believes also that these tumors may be referred to remains of the Wolffian body. Muus and Brosse believe that the tumors develop from the cells forming the permanent kidney. Wilms believes that the kidney mixed tumors originate from mesodermal cells in the neighborhood of the Wolffian body, and calls them mesodermal tumors.

The glandular structures in these tumors have been variously explained by different authors. Birch-Hirschfeld believes that the glands are preformed and are detached from the Wolffian-body formation. Vogler says that it is still an unsettled question whether these glands are of epithelial or connective-tissue origin. The same question exists concerning the permanent kidney (Hertwig). There are weighty opinions which hold to the view that the entire kidney is of epithelial nature, while others believe it to originate from the mesodermal layer (the former view is surely the correct one). Brosing considers the glandular structures to be lymph vessels. Perthes leaves the question open and says that the cells resembling epithelium are nothing other than cells of the sarcomatous groups.

Wilms' view is as follows: The tubular glands are not primary structures, but are outgrowths of certain cells of the embryonal tissue still in the stage of differentiation. From this embryonal tissue (the mesodermal cells in the region of the Wolffian body) originate all the above-mentioned structures and also the glandular elements. The round cells of these tumors are not sarcoma cells; they are embryonal cells which in their younger periods have round-cell forms, and later, on differentiation, form epithelium and glands. These cells must originate from a common area, because cartilage and striated muscle fibres are not found in the Wolffian body, and a displacement of cells forming these tumors from the structure of the Wolffian body alone, as Birch-Hirschfeld and others believe, without participation of the mesodermal cells, does not explain the presence of these two tissues. "We might grant," says Wilms, "that these tissues are first displaced into the Wolffian body and from there enter into the kidney, and we would then, at any rate, be following the generally accepted view, according to which all mixed tumors result from a group of displaced cells belonging to various already differentiated tissue complexes."

Personally I do not believe that the displaced cells must be already differentiated.

Wilms says further that all striated muscle fibres originate from the myotom, smooth muscle fibres from the mesenchym and from mesenchym cells, and that from the "primary segment" develop mucous tissue, fibrillary connective tissue, cartilage, bone, lymphoid structures, etc. The glandular structures originate from the "middle plate," because in the middle

plate the first formation of the Wolffian body makes its appearance; in this "middle plate" originate also the germinal epithelium, the Wolffian canal, and the ducts of Müller. In these last views Wilms is in error, for the germinal epithelium, the Wolffian canal, and the ducts of Müller *are of ectodermal origin*, since the Wolffian canal appears near the ectoderm and originates from the ectoderm, and later makes its way deeper up to the celom epithelium. Glandular structures cannot originate from mesoderm.

In Fig. 13 we may see Wilms' view as to these tumors and the region from which he believes the cells of the mixed tumors of the kidney to originate. From his description I doubt very much that in some of these cases epithelial gland

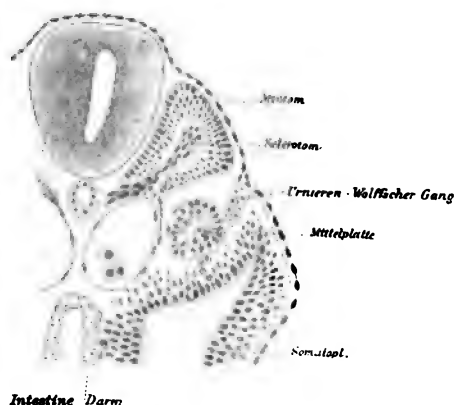


FIG. 13.—Section through a "primary segment," at the posterior body end of a three-weeks-old human embryo. After Hertwig.

structures or epithelial elements were present, and observe that Wilms excludes from this category that tumor in which Birch-Hirschfeld leaves the question in doubt as to the characterization of the "supposedly epithelial elements and spaces present." This question has for us a special interest, because I consider it possible that, when cells are here displaced, not always cells destined to produce *all the various connective-tissue structures* are removed from their place of origin, and that not always remnants of the Wolffian body must be present, just as it occurs that sometimes dermoids consist mainly of ectoderm, and other dermoids evidence mesoderm products to a greater or lesser extent, while in still others all the various products of these two layers are present. Wilms says:

"It would furnish difficulties, the fact that in some cases cartilage or fatty tissue is absent in the tumors. It is possible that certain tissue forms of the mesenchym, such as cartilage and fat, come to development only under certain external conditions. Secondly, certain tumors, in spite of the presence of these cells, may not have brought certain tissues to development, because, in addition to other requirements, they need a quieter and slower growth. Thirdly, we might adopt the view that only a part of the already differentiated mesenchym is displaced, or, finally, that certain tissue forms of the mesenchym may have been destroyed at an early period by others" (?).

If in place of these various hypotheses we accept the explanation that only a part of the mesenchym is displaced in the various cases, we may then easily understand why, in the various mixed tumors of the kidney, the mesodermal products appear in varying amount, and why certain tissue forms may fail entirely.

Since writing this explanation I find in Wilms' "Mixed Tumors," volume ii., 1900, that he has come to the same conclusion; and since a case quoted therein furnishes a splendid support to the above given explanation of the origin of retroperitoneal and mesenterial dermoids, I mention the following: In a work by Muus a mixed tumor of the kidney is described in which horny pearls were found. These were surrounded by epidermis-like cells. The presence of a stratum mucosum granulosum with keratohyaline nuclei, and a stratum corneum, make the resemblance to epidermis absolute. "How does it happen," says Wilms, "that in the mixed tumors of the kidney, which we have viewed as mesodermal tumors, ectoderm likewise may be present? During the displacement of cells, cell complexes must have been removed which *contained both ectodermal and mesodermal cells*. This fact is a further evidence that such a displacement of cells is not always a process of regular character, but one which occurs with all possible variations, in that at one time more, at another time fewer, cells are freed from their connection." We have therefore shown the mode of origin of the retroperitoneal dermoids, and have furnished proof of the possibility of a displacement of various forms of cell combinations. Exactly as, in the region of the kidney, mesodermal mixed tumors occur, in the same way may combinations of ectodermal and mesodermal tumors be formed; then we have dermoid cysts. The tumors which we have considered so far contained most differing tissues; it may be specially noted that in all other various

portions of the body mentioned *teeth and intestine-like tubes* are found; we have found teeth in dermoids of the hypophysis, in dermoids of the orbita, in dermoids of the neck, and in mediastinal and abdominal as well as retroperitoneal dermoids.

The origin of the teeth is to be explained through the united presence of ectoderm and mesoderm in these tumors. It is, at any rate, difficult to understand why, in the higher vertebrates, teeth normally occur only in the mouth, for those tissue combinations which are necessary for the building of teeth, as occurs in the oral cavity, are likewise present in other parts of the body. Kollmann says: "The early cell formation and development of the teeth comparative anatomy explains as a continuation of the tooth formation present upon the surface of the body of the lower vertebrates (the Selachier). The skin teeth, an evident organ of protection, are continued on into the oral cavity. Upon the jaws they reach, with their higher function, also a higher stage of development. Their development in *epithelium with the aid of the mesoderm is a primary occurrence*. Even in the lowest animal forms the teeth develop only through the participation of both these tissues." The teeth in dermoid cysts may lie scattered in the wall or may be found only in one part; they may be embedded in connective tissue or situated upon a bony or cartilaginous base; they may lie free in the cell contents. The teeth are for us a condition of greatest interest, and have obstructed the proper explanation of dermoid cysts and teratomata, for they have been considered as originating only in the oral cavity. We must consider the question in the following manner: Were the dermoids of the hypophysis and the dermoids of the palate really fetal monstrosities, then every so-called "epignathus" is a dead fetus. What gives this fetus, then, the power to continue its growth, and, among other things, to form teeth? In the case of Bonfigli, in which the tumor lay in the region of the liver and the stomach, teeth were likewise present. If this is really to be viewed as an engastrus, as Wilms desires, what gave this dead fetus the power, instead of forming a lithopedion, to grow to such an extent that twenty teeth were formed? At the same time it must be mentioned that on the inner surface of this tumor only an area of five square centimetres was covered with normal hairy skin. The case of Bardenheuer, which Wilms grants to have originated through the participation of the Wolffian canal, likewise contained teeth, so that we have at least one case in which we may draw the conclusion, with

the consent of all the authors, *that teeth may be formed without the presence of a second fetus*. I believe that we must explain this fact from a logical and embryological standpoint, as given above. If all these dermoid cysts, as must now be granted, originate from displaced cells, then these cells are cells of the porteur and rightly possess the same energy as the cells remaining in their normal situation. For that reason they grow at the same rate as the normal tissue cells, and the resulting dermoid cysts are therefore observed most *frequently during or after puberty*. In this way the occurrence of well-formed permanent or second teeth may be explained. Were these tumors, on the other hand, really fetus in fetu, we should expect to find mainly striated instead of smooth muscle fibres in these tumors. Although we shall later consider the difference between dermoid cysts and teratomata (solid dermoids) on the one hand, and double formations or monstrosities on the other, yet I would here express the opinion that a tumor in which teeth are present in all probability cannot be viewed as the remnant of a fetus.

As a further proof of the possibility of a displacement of cells may be mentioned the mixed tumors which occur in other parts of the body, as in the cervix and the vagina. We know, further, that small lipoma-like round growths occur in the kidneys, which, according to Grawitz, are to be considered as displaced pieces of fat-containing suprarenal tissue. According to Marchand accessory suprarenal bodies also occur in the ligamentum latum and in the vicinity of the ovaries. Accessory mammary glands also occur near the mamma and likewise at a distance, on the abdomen and the upper extremity. These, as well as accessory thyroid glands and accessory spleens, are only to be explained through a displacement of cells. If these cells be removed from their normal situation during the earliest embryonal period, they are at that time not yet differentiated and form later ectodermal and mesodermal structures. In that way ectoderm forms epidermis, enamel of the teeth, nerve cells, so-called "glia cells," etc.; mesoderm forms muscle fibres, fatty tissue, cartilage, bone, teeth, lymphoid tissue, etc.; ectoderm forms further glandular structures "like those in the intestine," as well as other cystic structures. If, on the other hand, these cells are displaced at a later period, when they are already differentiated and are already destined to form certain organs, they then form at that spot to which they have been carried organic structures, such as mamma on the

upper extremity, and suprarenal gland in the ligamentum latum, etc. Formerly it was difficult to understand how chondromata could develop in the parotis, and the theory of metaplasia was adopted. Now these cases are explained through displaced mesodermal cells.

(To be continued.)

ARTERIOSCLEROSIS OF THE UTERUS;
WITH A REPORT OF A CASE OF SO-CALLED "APOPLEXIA UTERI." *

BY

PALMER FINDLEY, M.D.,
Assistant in Gynecology and Obstetrics, Rush Medical College,
Chicago, Ill.

(With two illustrations.)

So far as I am informed, no special contribution has appeared in English medical literature on the subject of arteriosclerosis of the uterine arteries. That the condition frequently exists is not questioned. No doubt all pathologists will testify from their own experience that the lesion is not infrequently found. The subject, however, has not found its way into our text books on diseases of women and is rarely referred to in medical periodicals.

Herman¹ suggests that the hemorrhages from the uterus occurring without evidences of pregnancy or new growths are probably due to diseases of the blood vessels. In support of this view he cites hemorrhages occurring near the time of the menopause when the uterus is undergoing retrogressive changes, in the absence of local findings to account for the hemorrhages, and in the transitory success of local treatment.

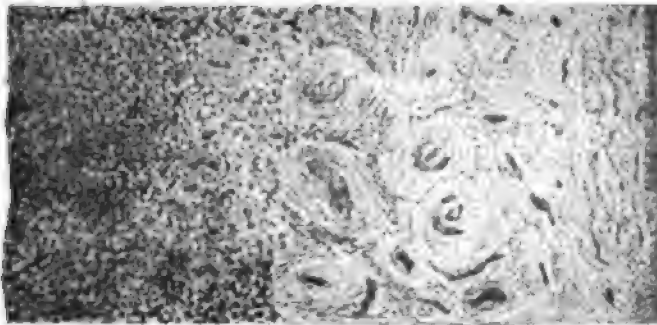
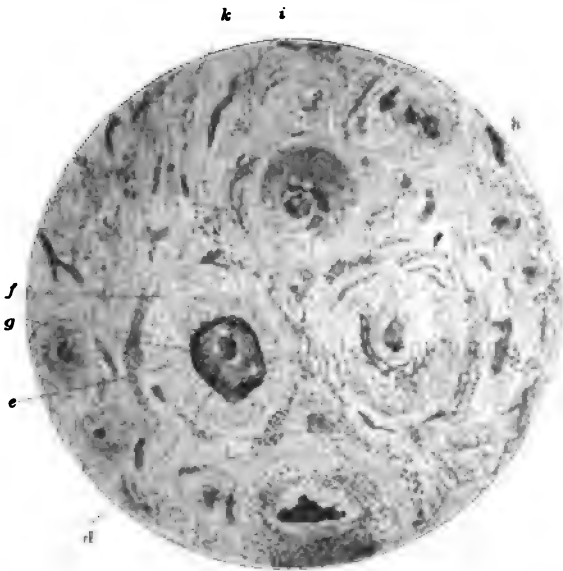
Gebhard² merely refers to the subject in his work on the pathology of the female genital organs.

Martin,³ in writing of menorrhagia, records 7 cases in which vaginal hysterectomy was performed to control uterine hemorrhage that had resisted all other means. In none of these cases was the cause of the hemorrhage known.

Küstner⁴ reported a case of postpartum hemorrhage which he ascribed to arteriosclerosis of the uterine artery. The pa-

* Thesis for admission to the Chicago Gynecological Society, presented November 16, 1900.

tient was 36 years of age, Ipara. Death occurred four hours after the birth of the child, notwithstanding the fact of the uterus being firmly contracted. There was but a slight tear of the



a, Hemorrhagic infiltration in endometrium; b, compressed gland in endometrium; c, sclerosed artery with calcareous deposit; d, annular calcareous deposit in sclerosed artery; e, tunica media greatly thickened; f, tunica adventitia thickened; g, tunica intima thickened; h, area of blood extravasation; i, small-cell infiltration; k, interstitial tissue (hyperplastic).

cervix and a rather extensive laceration of the perineum. To check the hemorrhage Küstner recommends tamponing the uterine cavity with gauze (Dührssen). The author regards

endarteritis as a forerunner of arteriosclerosis, and says it may occur in the period of sexual maturity.

Müllerheim¹ found arteriosclerosis and calcification of the uterine arteries in a patient who died of tubercular peritonitis. The ovarian and uterine arteries were calcified throughout their whole course. No clinical report is given. Müllerheim puts the query: "Is there any relation between tuberculosis of the peritoneum and arteriosclerosis of the abdominal vessels?"

S. Pozzi observed seven cases of uterine hemorrhage in the past sixteen years for which the cause could not be determined. In all these cases the usual methods of controlling hemorrhage failed and hysterectomy was resorted to. In two of the seven cases there was found arteriosclerosis of the uterine arteries together with atrophy of the muscle fibres and hyperplasia of the connective tissue of the uterine wall.

In the summer of 1896 Reinecke² observed four cases of arteriosclerosis of the uterine arteries in the clinic of Leopold, of Dresden. From his experience he infers that these cases are commonly overlooked—a fact to account for the scarcity of the literature. Following are abstracts of the cases:

CASE I.—Mrs. —, 40 years of age, married eighteen years; VIIIpara; last birth in 1892, from which time she suffered from a menstrual hemorrhage, each month, lasting eight to fourteen days. When admitted to the clinic in 1896 she was anemic and languid. The uterus was large and retroflexed; introduction of the sound caused profuse hemorrhage. The cervical canal was dilated with laminaria tents and the uterine cavity palpated. Nothing abnormal was found. The uterus was curetted, with negative findings in the scrapings. Four weeks later the hemorrhage returned, and a vaginal hysterectomy was performed. The uterus was $9\frac{1}{2} \times 6 \times 4\frac{1}{2}$ centimetres, the cervix 3 centimetres long; serosa smooth; muscularis in fundus 2 centimetres thick and of dense consistence; vessels on cut surface of the uterine body prominent. Microscopic findings: Mucosa intact, variable in thickness, glands normal, interglandular connective tissues rich in cellular elements, and the blood capillaries engorged. The mucosa was sharply limited from the musculature. In the musculature the vessels were greatly convoluted, and because of these convolutions they appeared on cross-section to be arranged in groups. There was an enormous thickening of the tunica media and, to a lesser degree, of the tunica adventitia. The intima suf-

ferred no change. There was also a thickening of the adventitious coat of the veins. The vessels were engorged with blood. A hyperplasia of the uterine connective tissue accounted in large part for the increase in the size of the uterus. There was some atrophy and fatty degeneration of the muscle cells.

CASE II.—Mrs. —, age 45, IV para, last birth in 1890, was admitted to the hospital in 1896. For a period of one year prior to her admission to the hospital she had suffered from menorrhagia and had become anemic and nervous. The uterus was much enlarged and anteverted, the cervix hypertrophic, and the uterine body of dense consistence. All attempts to control the hemorrhage failed. Curettage only temporarily checked the bleeding. A vaginal hysterectomy was performed. The uterine cavity was found filled with a bloody secretion. The endometrium was 2 centimetres thick and sharply limited from the musculature; the glands were normal and the interglandular connective tissue infiltrated with small cells. In the musculature the blood vessels were prominent, the walls thick and inelastic. The increase in thickness of the vessel walls largely affected the tunica media and to a less extent the adventitia; the intima was unchanged. Degenerative and inflammatory changes were seldom observed in the vessel walls.

CASE III.—Mrs. —, 43 years of age, married six years, entered the clinic in 1896. Up to 1894 the menstrual periods were regular, lasting three to four days. Then they became irregular, lasting three to four weeks, and followed by a watery, odorless discharge. The uterus was enlarged, anteverted, freely movable, and not sensitive to pressure. All the usual means employed in controlling hemorrhage failed; curettage only temporarily checked the bleeding. A vaginal hysterectomy was performed, leaving the tubes and ovaries, which were normal. The uterus was $9\frac{1}{2} \times 5\frac{1}{2} \times 4\frac{1}{2}$ centimetres; the cervix $3\frac{1}{2}$ centimetres long. The serosa was smooth and studded with thick-walled vessels which gaped from the cut surface. The mucosa, 1 millimetre thick, was covered with a bloody secretion. The microscopic findings were those of a small-cell infiltration of the interglandular connective tissue; the glands were normal, so also were the small arteries of the endometrium; but the large vessels were greatly thickened, the thickening confined to the tunica media and to a lesser extent to the adventitia. The changes in the vessels of

the cervix were more extensive than in the corpus. There was beginning atrophy and degeneration of the musculature.

CASE IV.—Mrs. —, age 45, married twenty-four years; menses began at 17 years of age and were of the twenty-one-day type, lasting three days. There were two abortions and twelve spontaneous births, the last in 1894. In February, 1896, she had her last normal menstrual period. The menses then stopped for five weeks, reappeared, and continued for fourteen days; then came another pause of fourteen days, and this in turn was followed by a continued hemorrhage lasting three weeks, to be followed by another pause of four weeks; and from that time she continued to flow until operated upon in July, 1896. An exploratory curettage was made, with negative findings, and followed by a vaginal hysterectomy. The microscopic findings were those of acute interstitial endometritis. The capillaries and small arteries showed no appreciable thickening, but the larger vessels were greatly thickened in all three coats of the vessel wall.

"Apoplexia uteri" is an ill-conceived term first applied by Cruveilhier' to a condition of the uterus characterized by a hemorrhagic infiltration of the endometrium together with arteriosclerosis of the uterine arteries. Later Rokitansky,* Klob,* Von Kahlden,* Herxheimer, Popoff, Dittrich," and others have written on the subject. Dittrich" reports two cases of so-called "apoplexia uteri." The ages were 65 and 68 years; both were multiparæ; one died of chronic emphysema of the lungs, the other of croupous pneumonia. Dittrich gives a meagre report of the anatomical findings in his cases and does not attempt to explain the cause of the hemorrhage into the uterine tissue. Orth" adds a report of a single case. The term "apoplexia uteri" is referred to by Fritsch in writing of "secondary hemorrhagic endometritis."

The first case of "apoplexia uteri" to be reported in detail was that of Herxheimer." The case occurred in the service of Prof. Weigert, of Frankfort-on-Main. The patient was 52 years of age and died in May, 1885. The postmortem findings were as follows: Chronic hemorrhagic nephritis (granular type); hypertrophy of the whole heart; thrombus of the left ventricle and right auricle; slight atheroma of the aorta; multiple pulmonary infarcts; hemorrhagic pneumonia of the right lung; hemorrhages into the internal layer of the dura mater; embolic plugging of the right hypogastric artery; infarction with gangrene of the vagina, portio vaginalis, lower portion of

the rectum, bladder, perineum, and pouch of Douglas; a general suppurative peritonitis; retinitis hemorrhagica and general edema. The primary lesion was in the kidney. The immediate cause of death was peritonitis. Nothing abnormal was to be seen in the body of the uterus, in the tubes or ovaries. The portio vaginalis was of a dark-red color and swollen.

To account for the hemorrhagic infiltration and gangrene of the above-named structures there was found an occlusion of both hypogastric arteries, together with the uterine and vaginal arteries, the external and middle hemorrhoidal, and the perineal arteries of the left side; and on the right side the common iliac and external iliac arteries.

The case reported by Popoff," of St. Petersburg, was found in the pathological institute of Chiari in Prag. The author begins his report by stating that he is not dealing with a simple case of chronic metritis, but with a hemorrhagic infarction analogous to infarcts of the lungs, spleen, and kidneys; that the condition is not to be confused with hemorrhages into the uterine tissue as the result of infectious diseases and heart lesions. The following history is given by Popoff:

The patient was 40 years of age when she was admitted to Prof. Knoll's clinic in Prag, November 2, 1892. She had borne four children. Ten years before her admission to the clinic she had an attack of pneumonia. The menstrual periods were usually painful and the flow excessive. She became paralyzed in the left side, including the face, upper and lower extremities. The heart action was arrhythmic, the area of heart dulness somewhat increased. The clinical diagnosis was embolic infarction of the fossa Sylvii, hemoplegia, and myocarditis. Death from heart failure occurred in January, 1893. The postmortem findings were: An old thrombus in the right Sylvian fossa, softening of the cortex about the Sylvian fossa, a serous exudate in both pleural cavities, multiple hemorrhagic infarcts of the lungs, the heart enlarged through hypertrophy of the right auricle and ventricle, both auricles filled with pale thrombi; the liver and spleen congested, the kidney granular; the uterus of dense consistence, 8 centimetres long, 4 centimetres wide at the fundus. The portio vaginalis was dark reddish-brown and swollen. On the posterior wall of the cervix the infiltrated blood extended to the internal os; on the anterior wall of the cervix to a point midway between the internal and external os. Furthermore the

hemorrhage extended deeper into the musculature of the cervix in the posterior wall. Both uterine arteries at the point of bending upward on the uterine wall were completely occluded by thrombi. The tubes and ovaries, as well as the body of the uterus, were apparently in a normal condition. There was marked endarteritis in the vessels of the uterus, and calcareous degeneration of the vessel walls was more or less in evidence. In both arteries and veins of the cervix were thrombi in various stages of development, some lately organized, others in the advanced stage of canalization. The darkened color of the cervical wall proved to be due to a fresh hemorrhagic infiltration. The blood elements were well preserved and the vessels engorged with blood. Glands were compressed by the infiltrated blood, their lumen almost obliterated, and the secreting epithelium desquamated and degenerated. Popoff observed that the infarct took the annular form rather than the typical wedge shape, because of the circular distribution of the vessels in the cervix. Popoff concluded his report with the following deductions:

1. Hemorrhagic infarction of the uterus is a rare occurrence, and can follow either an embolic or thrombotic closure of the uterine vessels.
2. It is essential that the closure of the vessels should be rapid, bilateral, and simultaneous.
3. The postpartum changes in the uterine vessels, especially in the cervix, may underly the formation of hemorrhagic infarcts.
4. The annular form of the infarct has its origin in the circular arrangement of the blood vessels.

C. von Kahlden" has contributed an excellent monograph on the subject of so-called "apoplexia uteri." His observations began in 1892, and in the following six years he collected eight cases for anatomical study. From his experience he affirms that the lesion is of more frequent occurrence than is to be inferred from the scarcity of the literature. His eight cases, briefly recorded, are as follows:

CASE I.—75 years of age, multipara; cause of death, pneumonia of the right lower lobe. The heart was soft, but there was no special lesion. The uterus was enlarged, filled with a yellowish fluid, and the endometrium filled with deeply infiltrated blood. The cervix was normal.

CASE II.—75 years of age, multipara. Postmortem findings: endocarditis with mitral insufficiency; thrombosis of pul-

monary arteries; multiple infarcts of the lung; double-sided, diffuse bronchitis; a bloody secretion in the uterine cavity, the endometrium of the corpus infiltrated with blood, the cervical mucosa pale and smooth.

CASE III.—83 years of age, multipara. Senile changes were found in all the organs of the body; the uterus normal in size, the endometrium of the corpus infiltrated with blood, the cervical endometrium unchanged. There were thrombosed vessels on the posterior surface of the corpus and cervix.

CASE IV.—87 years of age, number of childbirths not known. Anatomical findings: croupous pneumonia, high-grade atheroma of the aorta, dissecting aneurism of the abdominal aorta; isolated areas of hemorrhage in the endometrium, the cervix normal.

CASE V.—75 years of age, multipara; cause of death, pulmonary emphysema and bronchitis. The uterus not enlarged; the endometrium of a diffuse dark red color, the cervix normal.

CASE VI.—76 years of age, record of births not given. Anatomical findings: pulmonary emphysema, bronchitis, pancreatic cyst, atheroma of the vessels near the pancreas, uterus slightly enlarged, endometrium dark red, the cervix normal.

CASE VII.—66 years of age, multipara. Anatomical findings: fatty heart, apoplexia of the brain, pulmonary emphysema, hemorrhagic areas in the endometrium with normal tissues intervening, cervical mucosa pale and smooth.

CASE VIII.—52 years of age, multipara. Anatomical findings: gallstones, cancer of the gall bladder, metastatic growths in the lungs and liver, atrophy of the heart, slight atheroma of the aorta, endometrium infiltrated with blood, cervix normal.

In all cases the endometrium was infiltrated with blood of a dark-red color, the infiltration extending a variable depth into the endometrium and myometrium; in none of the cases was the cervical mucosa infiltrated with blood. In the majority of cases no blood was found in the uterine cavity. The uterus varied little from the normal in size. Groups of vessels with thick walls, containing calcareous deposits, were seen in the outer half of the uterine wall. These deposits were segmentary, semilunar or annular in form, and were largely confined to the tunica media of the vessel wall, rarely involving the tunica intima. The muscle fibres of the uterine wall were atrophic and in great part substituted by connective tissue. Von Kahlden mentions as predisposing causes pregnancy,

involution, puerperal and non-puerperal infections. He is not inclined to the belief that the hemorrhage is due to the rupture of the sclerosed vessels, as suggested by Cruveilhier and Klob, because the hemorrhages are confined to the endometrium and the inner half of the myometrium, while the sclerosed vessels are found in the outer half of the myometrium. Then, too, the cervical arteries are sclerosed and there are no hemorrhages into the cervical tissue.

Von Kahlden is of the opinion that the infiltrating character of the hemorrhage suggests the immediate cause to be a return flow from the veins due to an obstruction to the venous circulation. This is shown in the marked engorgement of the veins adjacent to the sclerosed arteries. Doubtless the presence of calcareous deposits in the arterial walls is a factor in the causation of the hemorrhage, in that such vessels are incapable of propelling the blood as do normal elastic arteries. In the eight cases reported by Von Kahlden the infarction was confined to the body of the uterus and was not present in the cervix, and it was observed that the arteries of the cervix were sclerosed and the lumen narrowed to as high a degree as were the arteries of the corpus; but with a single exception the calcareous deposits were confined to the arteries of the corpus, and in this exception there was a marked passive congestion of the cervix. This speaks for the rôle calcareous deposits in the vessel walls play in the formation of hemorrhagic infarcts of the uterus. Granular and hyaline degeneration often preceded the calcification of the vessel walls in the cases of Von Kahlden, and the calcareous deposits were in large part limited to the inner two-thirds of the muscularis, occasionally spreading into the intima. The intima may be ten times its normal thickness.

Balin¹¹ and Dittrich¹² have observed that in normal involution of a puerperal uterus the vessels undergo changes recognized as endarteritis obliterans. These changes are not confined to the placental site; in fact, they are equally well marked elsewhere in the uterine body. It is to be remembered that there are well-defined physiological and anatomical changes in the uterine vessels occurring in the periods of menstruation, gestation, the puerperium, and the climacterium. There is not only an alteration in the lumen and filling of the vessels, but there is also a change in structure of the vessel walls. According to the investigations of Westphalen,¹³ there is little or no connective tissue in the intima up to the time of puberty. In young women and in nulliparæ the connective

tissue is but slightly developed, but in advanced years and in women who have borne many children the connective tissue of the intima is greatly increased.

The case which I now have the privilege of reporting is one of so-called "apoplexia uteri" in which the hemorrhagic infarction is evidently caused by the plugging of the sclerosed uterine arteries with a blood clot dislodged from the heart. The specimen, including the uterus and appendages, was given to me as an "arbeit" by Prof. Langerhans, of Berlin. The autopsy was performed the previous month and the specimen preserved in Kaiserling's solution. The general postmortem findings at the autopsy were carefully recorded, but the clinical history was meagre and unsatisfactory. From the clinical history the following facts were learned:

Mrs. —, 70 years of age, was in good health until five months before her death, when she began to suffer from insufficient heart action and extreme anemia. Fourteen days before her death she was seized with a pain in the right side of the chest, that was immediately followed by spitting of blood and some vomiting. Simultaneous with the onset of the pain in the chest there appeared a pain in the hypogastrium, and this was followed by a slight bloody discharge from the uterus. The patient became very weak, the heart action irregular and feeble, and the respirations rapid, shallow, and labored. The age, anemia, and general weakness, associated with the pain and a bloody discharge from the uterus, suggested the diagnosis of cancer of the body of the uterus. The postmortem findings, briefly stated, were: endocarditis, dilatation of both ventricles, a large thrombus in both ventricles of the heart, nutmeg liver, a general sclerosis of the arteries of the body, a large hemorrhagic infarct of the right upper lobe of the lung, both uterine arteries calcareous throughout almost their entire extent, and in both uterine arteries a fresh blood clot. On opening the uterine cavity a small quantity of bloody secretion was found, and the endometrium was of a diffuse, dark-red color; the cervical mucosa was apparently normal. On the cut surface of the corpus the blood vessels stood out prominently, the lumina gaping and the walls thick and calcareous. Numerous small blood extravasations were seen in the uterine wall, giving a mottled red and gray appearance. The ovarian arteries were likewise calcareous. Hemorrhagic spots were seen in the cut surface of the ovaries and in the fimbriæ of the tubes; they were normal in size. No blood clot was found in

the ovarian arteries, but the lumen was greatly narrowed. The uterus measured $8\frac{1}{2} \times 5 \times 4\frac{1}{2}$ centimetres; the cervix, $2\frac{1}{2}$ centimetres; the musculature in the fundus was 2 centimetres thick and of firm consistence; the serosa smooth. No record was made of the condition of the other arteries of the abdomen and pelvis. Microscopic sections of the uterine wall showed an intense blood infiltration of the endometrium and, to a variable depth, of the uterine wall. Very little of the endometrium could be seen; here and there sections of glands were seen compressed by the effused blood in such a manner as to appear like epithelial nests, which in scrapings might be mistaken for cancer. The vessels of the musculature were engorged with blood, and isolated areas of diffused blood were seen in the uterine wall almost to the serous surface. The muscle cells were atrophied and largely replaced by connective tissue which stained faintly. Because of the convolutions of the arteries they appeared on cross-section to be arranged in groups. The walls were greatly thickened, particularly in the tunica media, but the intima and adventitia shared in the hyperplasia. In some of the vessels calcareous deposits were found, arranged in a crescentic, annular, and segmentary manner. These were largely confined to the media, but in some fields the intima was also involved. So far as observed, these deposits did not extend within the outer half of the musculature, though the thick-walled vessels were found even to the surface of the endometrium. The veins were engorged with blood and the walls somewhat thickened. The cervical arteries were thick-walled, the lumina restricted, but no calcareous deposits were seen.

The finding of arteriosclerosis and calcareous degeneration in the uterine arteries of a woman of 70 years is just what should be expected, particularly when the peripheral arteries are similarly affected. The case is not recorded because the writer believes arteriosclerosis to be a rarity, but rather to call attention to the lesion in the hope that it will be more generally recognized. The case does, however, claim peculiar distinction in the occurrence of thrombosis of the uterine artery with the resulting hemorrhagic infarction. Doubtless the pain in the hypogastrium occurred at the time of the plugging of the uterine arteries with a blood clot, which in all likelihood had been dislodged from the heart thrombi. I take it that from the thrombus in the left ventricle the infarction of the uterus occurred, and from the thrombus in the right ventricle

the infarction of the lung occurred, and that the plugging of the uterine and pulmonary arteries occurred simultaneously, as evidenced by the pain in the chest followed by spitting of blood, and the pain in the uterus followed by a bloody discharge from the uterus. It is not surprising that the clinical picture of pain in the hypogastrium, uterine hemorrhage, anemia, and extreme weakness in a woman of 70 years should be mistaken for cancer of the uterus. In such a case the possibility of cancer could only have been excluded by an exploratory curettage; and in this case the condition of the patient would not justify the procedure.

Arteriosclerosis alone has been charged responsible for uncontrollable uterine hemorrhage by Herman, Martin, Reinecke, and Küstner. The charge cannot be wholly sustained, because in none of their cases is there a record of having excluded other possible causes lying beyond the uterus. Reinecke and Martin performed hysterectomy in 13 cases for the control of hemorrhage, and in all the removed uteri the arteries were found sclerosed; but they did not exclude the possibility of obstruction to the return circulation from such causes as diseases of the heart and lungs, thrombosis of the venous trunks, and portal congestion from whatever cause. My point is that in the light of the 12 cases reported by Von Kahliden, Popoff, Herxheimer, and Dittrich, and the one I now report, arteriosclerosis *per se* may not be alone sufficient to cause a hemorrhagic infarction of the uterine tissues or hemorrhage into the uterine cavity. In the 8 cases reported by Von Kahliden the postmortem findings showed anatomical hindrances to the general circulation. There was pneumonia in two of the cases, pulmonary emphysema and bronchitis in three cases, cancerous infiltration of the lungs and liver in one, pulmonary infarcts in another, and in four of the eight cases there were heart lesions. In the case of Popoff there were granular nephritis and heart thrombi, pleural effusion and infarction of the lung and brain. In Herxheimer's case there was a hypertrophic heart with thrombi in the left ventricle and right auricle, granular nephritis, and atheroma of the aorta. In my own case hemorrhage did not occur until the additional obstruction to the circulation caused by the plugging of the uterine artery. It is therefore not conclusively demonstrated that arteriosclerosis can in itself be the cause of uterine hemorrhages. It would appear that there must be additional causes for obstruction, such as were found in the above-recorded cases.

In the so-called "apoplexia uteri" it is probable that the hemorrhages are not caused by the rupture of the blood vessels, but rather are due to capillary oozing. This would account for the hemorrhagic infiltration being so removed from the sclerosed vessels in the cases of Von Kahlden.

Respecting the etiology of arteriosclerosis of the uterine vessels and hemorrhagic infarction of the uterus, little can be said. Age varies within the limits of 50 and 87 years. Pregnancy, menstruation, and inflammation of the uterus have some bearing upon the etiology. The causes of arteriosclerosis elsewhere in the body would obtain in the uterus—i.e., alcoholism, chronic malaria, chronic lead poisoning, syphilis, etc.

Referring to the frequency of the lesion, it is not unlikely that arteriosclerosis of the uterine arteries and hemorrhagic infarction of the uterus are often overlooked in clinical and postmortem examinations. It is probable that many cases of so-called "senile endometritis" and "hemorrhagic metritis of the menopause" are in reality hemorrhagic infarction of the uterus and have as an underlying factor arteriosclerosis and calcareous degeneration of the uterine vessels. The fact that these cases occur in advanced years, may not be associated with leucorrhea, and no cause may be found for the hemorrhages either by clinical examination of the uterus and adnexa or microscopic examination of scrapings from the endometrium, would be strong evidence in favor of the view that these cases are not infrequently hemorrhagic infarcts of the uterus and that the primary lesion lies in the blood vessels.

As to the diagnosis, we are usually content to call such cases endometritis when there is no demonstrable cause for the hemorrhage. And if an exploratory curettage is made with negative findings, the indefinite diagnosis of metritis will probably be given, and particularly when the uterus is of dense consistence and uniformly increased in size. It is possible that the increase in the connective tissue of the myometrium may interfere with the circulation, but it is altogether certain that in many cases the primary cause lies in the walls of the blood vessels, and the hyperplasia of the uterus is secondary. It is altogether probable that arteriosclerosis of the uterine vessels may exist without symptoms, and, as above stated, there probably must be some additional obstruction to the return circulation in order to cause hemorrhage, which event is alone suggestive of the lesion. The clinical diagnosis is then

at best uncertain. If hemorrhage occur in the climacterium or near the time of the menopause, and there can be found no local cause for the hemorrhage, either in the presence of new growths of the uterus and adnexa, in the position of the uterus, or in the microscopic examination of uterine scrapings, then it is fair to presume that arteriosclerosis of the uterine arteries exists. If, in addition to this, there is found arteriosclerosis of the peripheral arteries of the body, and there exists a disease of the viscera to account for an obstruction in the return circulation from the pelvis, then it is further fair to presume that a hemorrhagic infarction of the uterus is present and that the uterine hemorrhages are due to a hemorrhage into the tissues and cavity of the uterus. It is not probable that the sclerosed vessels will be found in the scrapings, because they commonly lie in the outer half of the uterine musculature. Caution must be exercised in the liability of mistaking the compressed glands for cancer nests.

The treatment may be briefly outlined. So long as the arteriosclerosis does not rest upon a toxic basis, but rather upon senile conditions, therapy resolves itself to the control of the hemorrhages. The therapeutic procedures will be largely governed by the social condition of the patient. If she is dependent upon her labor for a livelihood and the hemorrhages are such as to reduce her strength, then vaginal hysterectomy will be indicated, as in the four cases of Leopold reported by Reinecke. Where it is possible for the patient to retire from work during the hemorrhages it is well to enjoin rest; to attempt to control the hemorrhages by ergot, the application of styptics to the endometrium, and the tamponing of the uterine cavity with iodoform gauze (Dührssen). If, however, the hemorrhages cannot be controlled in this manner, and the patient's general condition is seriously affected, vaginal hysterectomy must be resorted to. Reinecke writes of a case in which no less than twenty-five curettements were done to control the hemorrhages, without the desired result, and hysterectomy was finally resorted to.

100 STATE STREET.

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THE ELEMENT OF TIME IN OPERATIONS.¹

BY

JAMES NEPHEW WEST, M.D.,

Assistant Surgeon, Woman's Hospital; Instructor in Gynecology, New York Post-Graduate Medical School, New York City.

It would have been most pleasing to me to have listened to a paper on this subject written by one of the older members of the Society, but I have assumed the responsibility with the hope that we may receive the benefit of their experience through discussion.

We have all been internes in the Woman's Hospital, and many of us in other institutions, and have had, therefore, good opportunities for observation of the immediate effects of

¹ Read before the Woman's Hospital Society, November 27, 1900.

operations. I have referred especially to the opportunity of the interne, because it is while giving the anesthetic that one perceives most directly the effects of operations of varying degrees of severity and duration of time. It is while bending anxiously over your patient, watching with fixed attention every change in the respiration, pulse, and general appearance, that you have received the most vivid impressions of shock. It is the sense of deep personal responsibility as anesthetist which has sometimes made the minutes of an operation seem to you like hours.

We have all heard anecdotes of the lightning-like rapidity with which surgeons of a past generation performed their operations. Anesthesia, that greatest boon of humanity, had not yet been discovered. Think of having to operate upon a human being lying before you bound with straps and cords, and of your knife passing into the quivering flesh, alive to every sense, the victim screaming and struggling with pain and fear! Can you wonder that they operated rapidly? Every instinct of humanity demanded that they should develop the greatest speed possible.

The surgeon is now freed from those nerve-racking accompaniments of operation. His patient now lies before him unconscious, senseless, and inert; and it is my belief that this has developed an amount of deliberateness in operation which is, in many instances, altogether unnecessary and, as I shall attempt to show, unjustifiable.

Why should we attempt to complete an operation in the shortest time possible? Because of the shock of prolonged surgical operations, the poisonous effects of the anesthetic, the additional danger of infection of a wound exposed, and the loss of blood. You cannot consider this question without giving some attention to the subject of shock. I do not believe that the duration of an operation is as important an element in its production as it is ordinarily considered to be.

When you have given the anesthetic, at the Woman's Hospital, in one of those long and tedious but brilliant operations for vesico-vaginal fistula, did you ever have one moment's uneasiness on account of shock? I never did. But, on the other hand, when some surgeon has undertaken a serious abdominal operation, such as the removal of a large adherent ovarian cyst or uterine myoma, you have instinctively prepared yourself to meet it. Some of the most profound cases of shock I have ever witnessed have been those produced by

railroad accidents where the injury has occurred in an instant. I have witnessed many such cases while an ambulance surgeon in an institution which had a contract to care for the wounded of a large railroad system, and have always noted that one of their most characteristic features is shock, and that the injuries are always extensive, much more so than the first examination would indicate. It is not, therefore, the time of an operation which is such an important factor in shock as the character and extent of the tissues injured and the nature of the injury. It has appeared to me that it is much greater where the tissues are crushed or torn asunder than where they are cleanly cut. An important factor, also, is the location of the nerves involved.

Time and again I have seen the pulse sink and every evidence of shock produced by dragging or pulling upon the intestines; mere exposure, or even cutting, has nothing like the bad effect that traction has. This has been recently graphically illustrated by experiments with the manometer. They consisted in testing the effects upon the blood pressure of handling or injury of the abdominal viscera.

It is found that extensive handling of the omentum alters the blood pressure but little, but manipulation or dragging of the intestines creates a profound effect upon the circulatory system in diminished blood pressure. We must, therefore, conclude that in any operation involving such manipulations the extension of time in which this is done must add greatly to shock. Then we must work rapidly in abdominal operations, avoiding exposure, manipulation, and, above all, dragging upon the intestines, as much as possible.

I take the liberty of quoting a few authorities upon the subject. Wyeth says: "Shock may be defined as a condition of collapse resulting from physical injury (usually with severe hemorrhage) or mental emotion, whereby the functions of the nerve centres are more or less completely suspended."

Hare, in his "Therapeutics," says: "The body, particularly in its most vital parts, is controlled by inhibitory and accelerator nerves or nerve cells which govern the functions of all organs." "Shock consists in an over-stimulation of the inhibitory apparatus which governs the heart and respiration, ultimately followed by exhaustion of inhibition, so that the pulse and respiration become rapid and shallow instead of slow." "The period of inhibitory excitement speedily gives way to inhibitory exhaustion, and we have a rapid pulse from

inhibitory palsy, while through the palsy of the vasomotor system the blood vessels are relaxed and the normal resistance to the heart is taken away."

Kelly, in his classic work on "Gynecology," says: "One of the most frequent and alarming effects of an abdominal operation is shock, arising from a profound impression made on the nerve centres, and indicating extreme depression of the patient's vital forces. Shock is usually observed either during or shortly after an operation."

"*Causes.*—One of the most frequent causes of shock is prolonged anesthesia. Excessive loss of blood during an operation upon a plethoric person, or moderate hemorrhage in an anemic patient."

"A constitution already enfeebled by disease. Prolonged exposure of the intestines and omentum through a long incision or when lifted out of the abdomen."

Kelly makes especial mention of the prolonged administration of ether as an important element in shock. Whether the ether contributes in an important way to the production of shock, or whether it operates through its own poisonous effects to induce a condition which should not be confounded with it, I am not willing to say. I can state positively, however, from examination of the urine passed after operations in a large number of cases, that it has invariably given evidence of irritation of the kidneys, sometimes even to the extent of a dangerous nephritis. This irritation has borne a striking proportion to the duration of time in which the ether was administered.

Another important element of time in operation is the prolonged exposure of extensive wound surface or that normally protected from the air. The danger I refer to is that of infection. If you do not credit this, take a slide, moisten it with glycerin, and suspend it in the air of an ordinary room for twenty-four hours, then examine it under the microscope. I believe that every wound opened to the air is an infected one, but the living tissues in most cases can overcome the agent of infection when in small quantity. Hence the importance of small wound surface and short exposure.

In a general way, we may say that the longer wounds are open and the greater their extent the more blood will there be lost through oozing.

I have by no means fully stated the reasons why an operation should be done in the least possible time in which its

object can be *properly* accomplished, but I believe that I have gone into the subject sufficiently to point out the great importance of the element of time. I wish to emphasize the word *properly*, because we should avoid that kind of haste which means waste in the ordinary affairs, but which in surgery may mean the loss of life. Every blood vessel should be tied securely, every stitch taken judiciously, but all in the least possible time in which it can be done.

This paper would be incomplete if I failed to give some attention to those little details which are accessory to operations and which appear small in themselves, but which taken collectively may determine whether the operations are to be performed rapidly or slowly.

Delay sometimes occurs from a failure to have the necessary instruments at hand, or from having them tardily passed or in poor condition. If a knife or scissors be dull, two or three strokes may be necessary where one should be sufficient. The convenient and accessible location of most of the instruments to be used is of great importance. It is easier to reach out and seize an instrument than to convey the idea in words to another and have him act upon it. It is difficult and time-consuming, for instance, to pause in an operation, when deeply engrossed, to think of the name of a pair of forceps. If the suture material be weak it is a cause of great annoyance and delay. If a ligature, passed with great care and difficulty, should break while being tied, the delay may have serious consequences.

The proper administration of the anesthetic is of very great importance. The anesthetist should have his patient thoroughly anesthetized by the time the surgeon is ready to begin his work. Rigidity of muscles, vomiting, and changing of position are things thoroughly under his control, and he should be held strictly to account for them.

Rigid muscles in an abdominal operation may be the cause of serious embarrassment and delay, and even of danger to the patient. In a plastic operation done in Sims' position, an imperfectly anesthetized patient may straighten out the limbs, thereby displacing the instruments, interfering with the relation of the parts, and soiling the sutures and field of operation. More ether will have to be used in the end than if the patient had been kept completely under its influence from the beginning.

The causes of delay which I have already mentioned are almost inexcusable, for they are easily preventable.

The instruments and sutures should be in the care of one intelligent and capable person, who may be held directly responsible for their condition. The corps of assistants should be well trained and alert. Especially is this true of the one who passes instruments. He should follow the operation, and in most instances have the instrument or suture required at a given period on hand without having to be called upon for it.

We have thus far, as I have said, been considering the accessories of operation; let us turn for one moment to the surgeon himself. Let him once thoroughly appreciate the necessity for rapid operation, and all else will follow. He will thoroughly familiarize himself with the anatomy of the parts upon which he is to operate. He will also diligently cultivate that manual dexterity and appreciation of the mechanical problems involved which is necessary to the expert surgeon. Selfishness can have no part in his composition. With a good conscience, a cool head, expert knowledge, cultivated judgment, and a steady, well-trained hand, he truly represents one of the noblest works of God.

TWO RARE TUMORS. (1) A CALCAREOUS UTERINE FIBROMA,
AND (3) A FIBROMYOMA OF THE URETHRA.¹

BY

H. G. WETHERILL, M.D.,

Professor of Gynecology, University of Denver; Surgeon and Gynecologist, St. Luke's Hospital; Gynecologist, National Jewish Hospital; Consulting Gynecologist, Mothers' and Children's Home, Denver, Col.

(With two illustrations.)

IN the course of my work during the past few months two rare tumors have been removed.

A Calcareous Uterine Fibroma.—This was a fibroid tumor of the uterus, one nodule of which had undergone complete calcareous degeneration. The tumor was a true fibromyoma in all its parts excepting this particular nodule. One mass, having its origin near the fundus, was pediculated, very soft—almost fluctuating in consistence—and at first presented the

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appearance of a cyst. The usual supravaginal amputation was done, the patient making an entirely satisfactory recovery.

On examination of the specimen after removal, a nodule about the size of a large orange (diameters 4 and 3 inches) was found in the left uterine wall. It was quite symmetrical and entirely interstitial, and so infiltrated with lime salts as to



FIG. 1.—Calcareous uterine fibroma. 1, interstitial calcareous nodule, perpendicular sawed section; 2, pediculated soft myoma.

appear like a mass of uncalcined limestone. It was so dense that it was necessary to use a saw for the purpose of making a section of this portion of the tumor. I am indebted to Dr. William C. Mitchell for the examination of the specimen and a report upon its structure.

The clinical history of this patient differed in no way from the ordinary history of uterine fibroma, excepting that there was an unusual hereditary predisposition to cancer, her father,

mother, two maternal aunts, and one paternal aunt having died of that disease. My patient was 52 years of age at the time of operation, and still menstruating, or at least having irregular free bleedings from the uterus. She was also subject to tachycardia, due doubtless to her great anemia, the pulse at times reaching 160 beats per minute. This disappeared after her operation.

A Fibromyoma of the Urethra.—Early in April, 1900, I saw for the first time the patient whose history is here given. She was 46 years of age, unmarried, had passed the menopause, and was in good health excepting that she complained of being always tired and unable to walk and was much annoyed by irritable bladder. Her friends informed me that she was disposed to be melancholy and depressed at times.

She consulted me about a protrusion at the external genitals which had existed for some years, and which had been pronounced an inoperable prolapse of the bladder.

On examination I found protruding from the vulva a tumor with attachments to the anterior vaginal wall and with the meatus urinarius situated near its dome. The mass was about $3\frac{1}{4}$ inches by 2 inches in its diameters, was edematous, and its surface eroded in patches, as is well shown in the drawing, for which I am indebted to Dr. William C. Bane, of this city. It was reducible inside the vagina, but required packing and a T-bandage for its retention. The urethra traversed it near its upper border, and, after a careful examination, it was quite apparent that it was not a cystocele, a sound in the urethra and bladder clearly determining that question.

The tumor first made its appearance after a fall twenty years ago, and first protruded from the vulva about ten years later. Its growth has been slow, and, aside from its bulk and the bladder irritation it produced, it has given rise to little annoyance other than the anxiety it occasioned and the interference with walking. It has never been tender or painful.

Its removal was advised, and the operation was done at St. Luke's Hospital, Denver, March 3. An elliptical incision was made over the most prominent portion of the tumor below the meatus, and a careful dissection begun. The tumor was firm and fibrous in character and easily enucleated from the adjacent tissues, except in its anterior portion, where it completely enveloped about one and a half inches of the elongated and dilated urethra. A sound was introduced into the urethra, and that canal was carefully worked out, the isthmus of the tumor overlying it being divided. For a distance of

about an inch the coats of the urethra were removed along with the tumor, leaving nothing but the mucous membrane, the tumor having its origin in the submucous layers of fibrous and muscular tissue of the urethra. During the enucleation a small hole was torn through the mucous membrane into the canal. This was carefully sutured with fine catgut, and the portion of the urethra which lay free in the upper angle of

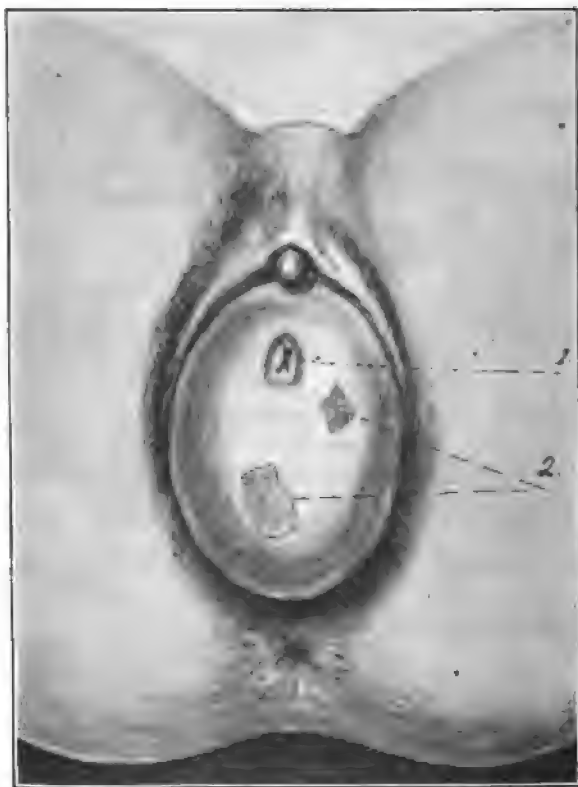


FIG. 2.—Fibromyoma of the urethra. 1, meatus urinarius; 2, erosions.

the wound was carefully covered over by the approximation of the side walls of the cavity from which the tumor had been turned out. The vaginal mucous membrane was nicely brought together over all, a drainage catheter placed in the bladder, and the patient was taken to bed. Her recovery was good, with the exception of a small slough just below the meatus, which occurred as a result of slight leakage through the torn urethra. This little opening failed to cicatrize.

When she began to be about on her feet it developed that the control of the bladder was imperfect, and later a second operation was done to re-establish it and to close the little fistula into the anterior urethra; but in this attempt I was only partially successful, as so much of the muscular tissue of the urethra and neck of the bladder had been incorporated in and removed with the tumor, previous control depending somewhat upon the pressure of the tumor mass. After many trials a pessary was so perfectly fitted to take the place of the pressure formerly made by the tumor that the control of the bladder contents was completely restored.

The patient is quite free from annoyance of any kind from the pessary, and it so restores the bladder function that she has declined further surgical interference, though it is probable that under the existing conditions sphincteric power could be restored by a very simple plastic operation.

The tumor was submitted to Dr. J. A. Wilder for examination, and he reported as follows: "The tumor from vagina labelled F. I find to consist almost entirely of fibrous tissue. Sections made from different parts of the specimen show the fibres to be compactly arranged, in other places, loosely arranged. *A few unstriated muscular fibres were found scattered through the tumor.*"

Tumors of this kind are of rare occurrence. In the literature at my disposal I am unable to find reference to more than one. In Kelly's "Operative Gynecology" (vol. i., page 310) I find this note, Dr. Kelly citing no cases from his own vast experience: "Buttner describes¹ a case of myoma of the urethra observed at F. Ahlfeld's clinic in Marburg in September, 1893." A brief history of the case is given, and it resembles my case very closely, except that the tumor "was made up almost entirely of the smooth muscular fibres of the urethra with a minimal admixture of fibrous tissue."

There is little doubt that the structure of the tumor removed from my patient had undergone considerable change during the years of its existence, its muscular fibres degenerating. Its position and origin would clearly point to the muscular coats of the urethra as the tissue from which it arose, and I believe I have properly classified it as belonging in the rare group of urethral fibromyomata, originally, perhaps, of the leiomyoma type. Dr. Wilder's report, for which I am much indebted to him, confirms this opinion.

1622 WELTON STREET.

¹ *Zeitsch. f. Geb. und Gyn.*, vol. xxviii., part ii., p. 186.

A CASE OF PREGNANCY IN THE RUDIMENTARY HORN.¹

BY

EMIL RIES, M.D.,

Professor of Gynecology, Post-Graduate Medical School,
Chicago, Ill.

THE case reported here presented some features which seemed to warrant its publication, as they are unusual, even among these comparatively rare cases of pregnancy in the rudimentary horn.

The patient, 32 years old and of American birth, was brought to me by her family physician, Dr. E. H. Fitzpatrick, of Odell. The patient reported to have had malaria and the usual diseases of childhood. Her menstruation had always been normal and painless. She had six children, no miscarriages. Since the first child she complained of pain and a feeling of heaviness in her right side. The labors had all been natural. None of them had led to any puerperal infection.

The date of her last menstruation was not quite certain. The patient believed that it occurred on October 15, 1899, but neither the size of the uterus nor the size of the fetus corresponded with this date. During the entire pregnancy, especially during the first three months, the patient had pain in her right side. On June 8, 1900, severe pain began in the region of the umbilicus, which lasted two or three hours. Two days later patient drove a distance of five miles, and subsequently had very severe pain in the abdomen, with vomiting, and fainted several times. The pain was constant and severe, and was still present when patient arrived at the hospital. Patient vomited everything she ate; later on she vomited bile. It was impossible to produce a good bowel movement.

Patient arrived at the hospital June 12, 1900, at 1 A.M. Her facial expression was anxious, temperature 99°, pulse 104. Heart, lungs normal. In the abdomen the pregnant uterus could be felt reaching two fingers' breadth above the umbilicus. Fetus plainly palpable; fetal heart sounds 140, regular. No dulness in the abdomen outside the uterine area. Internal

¹ Reported to the Chicago Gynecological Society, November 16, 1900.

examination revealed soft, slightly lacerated cervix. Bimanual palpation impossible on account of severe pain on touching the abdomen. Patient complained of constant pain in her right side. She was put on liquid diet and it was attempted to produce a bowel movement, but with very slight success. The temperature reached 100.6° in the evening, the pulse 112.

On the 13th the pain continued undiminished; patient vomited several times; the temperature reached 101.2°, the pulse 120. No bowel movement in spite of several enemas. Morphine brought only slight relief.

On the 14th the subjective condition of the patient was unchanged. She had constant pain, vomited everything, temperature was around 101°. A very important objective symptom, however, was found on this day—namely, dulness on percussion over the right side, which did not migrate with a change of position. As this indicated some kind of an effusion, and as the patient's condition had not improved at all, operation was advised and the patient accepted eagerly.

In good narcosis (first chloroform, then ether) the operation was performed the same day. It lasted about forty-five minutes. As a rupture of the gall bladder had been taken into consideration, at first a small incision was made over the gall bladder. As soon as the peritoneum was reached, its color was seen to be greenish or brownish, and when it was incised dark blood with numerous clots escaped. Gall bladder was found intact. Passing the hand downward into the abdomen over the pregnant uterus, I felt on the right side a normal appendix, and to the left of the pregnant uterus a soft, slightly enlarged second uterus. A large median incision was now made, through which the pregnant uterus escaped easily from the abdominal cavity. This uterus presented large veins on its surface, the right round ligament laterally and in front, the right ovary and tube laterally and behind. It was connected with the left horn by a thin muscular pedicle and thin ligamentous tissue. The muscular pedicle was inserted high up on the left uterus. The pregnant uterus presented on its anterior surface an irregular rent, about six centimetres long, which penetrated several veins directly under the peritoneal coat, but not the muscular tissue of the sac (incomplete rupture). The pregnant organ was therefore a rudimentary horn, and its removal was proceeded with. The tissue underneath this rudimentary horn being so thin and the connection between the two horns being formed only by the thin muscular

pedicle, there was no difficulty whatever in the amputation or in the subsequent closure of the broad ligament with a continuous row of catgut sutures. The liquid and coagulated blood to the amount of about two quarts was removed. The abdomen was closed, and at the same time an assistant injected normal salt solution under both breasts.

After removal the sac was opened and a living, well-formed female fetus of four pounds in weight and thirty centimetres in length was extracted, which died in a few minutes. The sac, characterized as rudimentary uterus by the above-mentioned relations to round ligament, tube, ovary, and left horn, was almost completely invested with placental tissue on the inside. It presented no opening toward the left uterus, no vestige of a cervix, and the muscular connection with the left uterus proved to be entirely devoid of any epithelial channel on careful microscopic examination. The ovary removed with the sac contained no corpus luteum; the tube was normal, patent, almost perfectly straight.

On the 15th and 16th of June small shreds of pardecidua were passed from the uterus; on the 18th a beautiful specimen of an almost complete pardecidua was discharged spontaneously. This pardecidua was born turned inside out, so that the minute openings of the uterine glands were seen on the outside, whereas the ragged surface which had been in contact with the uterine wall was inside.

The abdominal incisions healed by primary union, but the transfusion, owing to faulty technique, led to extensive gangrene of the breasts. This caused rise of temperature and considerable pain for almost a week until both breasts were freely incised and the gangrenous portions removed. Immediately thereafter the temperature dropped to normal and the pain in the breasts disappeared.

Patient sat up in bed on the 16th, was up in a chair on the 17th, walked on the 18th, and left the hospital on July 1. The breasts required the attention of the family physician for over a month longer.

I have seen the patient again, in October, 1900, in very good health. She had not menstruated up to that time. The abdominal scars were perfect.

One of the interesting features of this case is that it is undoubtedly one of external migration of the ovum. As (1) there was no communication between the right pregnant and the left non-pregnant horn, as was substantiated by microscopic

examination of the muscular connection between the two uteri, and as (2) the right ovary contained no corpus luteum, the ovum must have come from the left side through the peritoneal cavity. It is evident that before impregnation, especially if the right horn was slightly retroverted, the two ovaries and fimbriated ends of the tubes may have been lying very close together, so that the entrance of an ovum from the left ovary into the right tube need not appear surprising.

The symptoms which the patient presented on entering the hospital were more those of an intestinal obstruction than those of a ruptured uterus. Patient had obstipation, vomiting, constant pain, rise of temperature, no anemia worth mentioning. The pains which precede the rupture of a pregnant uterus are usually intermittent and rhythmical in their character, like labor pains, not, as in this case, constant. They are usually located in the uterus, not, as in this case, over the whole abdomen. The presence of blood in the abdominal cavity is not usually associated with pain. In this case, however, as in some others which I have observed, the blood, especially the clotted blood, seems to have caused the pain, possibly by interfering with normal peristalsis.

The rise of the temperature before the operation cannot be explained on the basis of infection, as the subsequent uneventful healing of the abdominal part of the operation demonstrated. Obstruction of the bowel in itself frequently produces slight rise of temperature, but the same may be said of hemorrhage in the abdomen. Both were present in this case at the time of the operation. Undoubtedly some hemorrhage had taken place before it found its clinical expression in the dulness discovered on the day of the operation, so that it remains doubtful whether the rise of temperature prior to the operation is to be explained as due to autoinfection from intestinal obstruction or as due to "aseptic fever" from absorption of the intra-abdominal hemorrhage.

A very important observation was that of the rent in the pregnant horn, which had begun on the peritoneal side of the uterus, while the deeper layers were intact. The observation of a pregnancy in a rudimentary horn during the process of rupture is of necessity a rare one.

The discharge of the pardecidua was observed here as in all cases where it is looked out for.

CESAREAN SECTION FOR CANCER OF THE RECTUM.¹

BY

J. M. BALDY, M.D.,
Philadelphia, Pa.

ABOUT September 20, 1900, I was asked by a former patient to see and pass an opinion upon a friend of hers who was reported to be pregnant and who was not expected to live much longer. I found a thin, emaciated woman, about seven and a half months pregnant as far as I was able to judge. The patient was bed-ridden, waxy in appearance, and suffering constant pain and bearing-down in the back and rectum, unable to retain anything on her stomach, and constipated. When the bowels were moved, as they had to be by medicines and enemas, she suffered at the time and for hours afterward most excruciating pains. Altogether she was in a most miserable condition, a pitiable object.

An examination disclosed a proliferating growth (only too evidently cancer) in the rectum about an inch above the internal sphincter, at a point of easy removal and resection of the bowel, the sphincter being uninvolved. The uterus was distended by a seven and a half months' pregnancy. There was an abdominal scar some three inches long in the median line, which the patient and her friends explained had been made by a prominent gynecologist in order to remove an extra-uterine pregnancy some four months before. The case being found to be one of intrauterine pregnancy, the operation was ended and the mistake explained. Several problems presented themselves for solution.

First, I believed in order to relieve the woman's suffering, as a first step the uterus ought to be emptied and the pregnancy terminated; second, the interest of the child had to be considered. The method of emptying the uterus was, therefore, to be seriously considered. Two ways presented themselves—*per vias naturales* and by way of an abdominal incision. The pelvis was fairly roomy, and the only thing to be considered was the obstruction to be met with at the seat of the cancer. The proliferating mass was large, but could have been over-

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, November 15, 1900.

come, I think, by putting on forceps and dragging the head over the mass, crushing it flat. To have done this meant the loss of considerable time in the delivery, the loss of an indefinite amount of blood from the bleeding rectum after the delivery, to say nothing of the shock to the patient and the enormous amount of suffering involved. My unhesitating judgment was that the patient would not survive the delivery and that it would be an unnecessary cruelty to which to submit her. Of course, anesthesia could be resorted to and part of the result avoided, but there was also grave danger that a prolonged anesthesia would in itself terminate life. On the other hand, an abdominal section promised a quick delivery with a minimum of loss of blood and shock, with no disturbance of the cancerous mass and the attendant danger from this source, a shorter anesthesia than a delivery per vaginam, and the certainty of a living child. The patient was admitted to the Pennsylvania Hospital on the 22d of September last; the operation was performed six days later.

The abdomen was opened in the median line, the uterus exposed, opened freely, the child (a boy) together with the placenta delivered, and the uterus amputated at the neck. The operation was finished as an ordinary hysterectomy, the stump being dropped and the abdominal wound closed without drainage. This operation was chosen as being the one which could be most quickly finished. The operation was over in fifteen minutes, and the patient, without a particle of shock, returned to bed. The result was all that could possibly be hoped for. The convalescence was normal and uninterrupted, the constant pains and distress in the back and rectum almost entirely disappeared, the stomach recovered itself and in a short while retained nourishment freely, the woman picked up for a time from the double reason that she now had but herself to nourish and could retain and digest food. Her bowels came under good control with medication, and it was only rarely that an opiate was necessary after a movement. The result of emptying the womb on the woman's suffering was so great as to fully justify the procedure. The result on the growth of the cancer was, of course, nothing. The disease was too far gone and the patient's condition too bad to warrant an operation for its removal; the time had passed for that. The operation accomplished that for which it was performed, and no more. The method of delivery was and is, to my mind, fully as much justified as the delivery itself. The patient left the hos-

pital the last day of October, her husband and friends preferring that she die at her own home in preference to the hospital. She is still living. The child weighed at birth three pounds and five ounces. It was sent at once to the Preston Retreat, where Dr. Richard Norris assumed charge of it for me, and has made an incubator its home. It still lives, with a good prospect of continuing to do so. Yesterday for the first it was put to the breast and suckled well.

It seems to me, with this case in view, that the Cesarean section has as legitimate (albeit a more narrow) place in surgery for the purpose of relieving suffering as it has as a life-saving procedure, and this in spite of the fact that we are well aware that most cases upon whom nowadays the section is performed would deliver themselves with more or less ease were they given the opportunity.

A CASE OF MALIGNANT CHORION EPITHELIOMA OR
SO-CALLED DECIDUOMA MALIGNUM.¹

BY

ABRAM BROTHERS, B.S., M.D.,

Adjunct Professor of Gynecology at the New York Post-Graduate Medical School
and Hospital; Visiting Gynecologist to Beth Israel Hospital, etc.

(With illustration.)

AFTER impregnation the ovum bores through the epithelium and sinks into the stroma of the mucous membrane of the interior of the uterus. The point of perforation becomes obliterated through thrombus formation, and, in the growth of the ovum, this part protrudes and consists of ovum covered in by decidua capsularis (formerly called decidua reflexa). The decidua basalis (or serotina) continues as small islets between which later the points of the placenta dip, but the decidua capsularis entirely disappears with the development of the ovum. The decidua separates histologically into (1) an "inner" or "large-celled" or "compact" layer, and (2) an "outer" or "glandular" or "ampullar" layer. The presence of decidual elements without chorionic villi in the scrapings of a suspected case is not sufficient evidence of pregnancy within the uterine cavity.

¹ Read before the New York Obstetrical Society, November 18, 1900.

Originally, as the ovum sinks into the mucous membrane stroma, there are no villi. But at the contact surface (decidua serotina) an extraordinary increase in the growth of cells occurs, from which two layers become differentiated: (1) the outer layer, or "syncytium," from which the destructive "epithelial wandering cells" are derived; and (2) the inner layer, consisting of the polygonal epithelial cells known as the "Langhans cells." The syncytial wandering cells come in contact with the decidual capillaries, whose walls they destroy, and thus about the whole periphery of the ovum the layer of the "chorionic villi" (or "ectoblast shell") develops, which in the course of the pregnancy (beginning of the third month) becomes differentiated into the "chorion leve" (or smooth chorion) and "chorion fundosa" (or placenta). The villi float freely in the opened decidual maternal capillaries.

A villus then consists of three portions—a basic cone covered by two epithelial gloves. The basic structure consists of mucin with stellate, round, and spindle cells. The internal cover, or "fetal ectoderm," consists of a continuous layer of light cells known as the "Langhans cells." The external cover consists of an adherent mass of protoplasm with scattered dark nuclei, and is known as the union of cells, or "syncytium." This picture is only typical of the first weeks of pregnancy, for later, particularly toward the end of pregnancy, the layer of Langhans cells is destroyed and completely disappears.

With apologies for the foregoing elementary remarks, but which are requisite for a clear understanding of what is to follow, I proceed to consider the subject under consideration. I will at once add that my views are simply those of my respected teacher, Dr. Ludwig Pick, of Berlin, in whose laboratory I had the privilege of working one year ago.

After abortions, childbirth, and hydatid moles, Säger first noticed excessively malignant growths of the uterus, which spread through the blood channels in the corpus uteri like sarcoma—that is, a form of sarcoma which develops from decidual cells and is characterized by elements of similar structure. Hence he gave the new growth the name of "decidua malignum" or "deciduo-sarcoma." Pfannenstiel (1898) still maintains that the new growth is derived from the maternal endothelium, and is, therefore, an endothelioma. Veit (1898) still holds the view that the neoplasm is a sarcoma modified by existing or previous pregnancy.

Gebhard (1899), in refuting these views, says that Säger

may have mistaken wandering villus-epithelium cells for decidual cells, which they often closely resemble; that Pfannenstiel has yet to prove the new growth an endothelioma histologically; and that instead of a resemblance to sarcoma, as claimed by Sanger and Veit, the new growth shows rather the characteristics of carcinoma.

Against this theory of a maternal origin to the new growth Gottschalk was perhaps the first to claim for it a fetal origin. He showed that the growth is neither sarcomatous nor of decidual origin. Hence the term "deciduoma malignum" is a misnomer. He claims that the origin of such a tumor is in the villi, and that the stroma as well as the epithelium originates the malignant hyperplasia. In this view he has been supported by many, including Pick, Gebhard, L. Frankel, and Marchand; although the two latter authorities deny the participation of the stroma altogether, and Gebhard claims that there are cases in which syncytium alone is present, with a complete absence of Langhans cells.

Besides the evidently wrong name of deciduoma malignum, Gebhard has given the new growth the name of "syncytioma malignum," with which he himself is not fully satisfied, and Marchand devised the more accurate but ponderous name of "chorio-epithelioma malignum." In English, however, it does not sound so heavy as "malignant chorion epithelioma," which fully covers the origin and character of the new growth.

As the chorion epithelium freely communicates with the maternal blood vessels from the beginning, metastases in the lungs, spleen, vagina, and elsewhere may appear. Besides the circulation, the new growth may invade the adjacent myometrium. As it does not possess an individual blood system, hemorrhages and necroses are frequent.

Besides the corpus uteri the growth may develop in the tube, as in ectopic gestation, or, according to Gebhard, in any portion of the body freely supplied with blood vessels. Thus Schmorl saw such a primary new growth in the vagina.

Pick separates the growth into two forms: (1) typical and (2) atypical.

1. In the typical variety syncytium masses build a network in the meshes of which lie the Langhans cells.

2. In the atypical variety the tumor substance is formed of mostly isolated giant wandering chorionic cells.

An intermediate variety sometimes is mingled with either of these, and gives on the whole rather a sarcomatous impression.

The history of the present case briefly is as follows:

Mrs. M. K., age 24. Family history negative. Menstrual history began at the age of 15; type, four-weekly; duration, three to four days; amount, moderate; sometimes slight pain preceding the flow.

In June, 1899, after bleeding a month, she had an eight weeks' miscarriage.

In June, 1900, after suffering considerable pain after a somewhat delayed menstruation, she began to bleed, and lost so much blood that on June 21 she was subjected to a curettage by her family physician. The scrapings were not examined microscopically. She remained well for two and one-half weeks, when bleeding came on in an irregular manner, would last two or three days, and, after being clean for several days, it would again return.

In this state she was admitted to the service of Prof. H. J. Boldt at the Post-Graduate Hospital on August 21. Suspecting the condition known as "deciduoma malignum," the patient was put under an anesthetic. The long, conical cervix, after thorough dilatation, was incised bilaterally to a depth of one inch. The uterus was found to be somewhat enlarged, and, although its cavity seemed to be empty on digital examination, it was subjected to a thorough curettage and a small, suspicious mass removed. After irrigation of the uterine interior the cervical incisions were reunited with chromicized catgut. The small mass was examined microscopically and pronounced to be of myxomatous structure. Everything seemed to point against malignancy.

After this the patient remained well until the last week in September, when she had another exhaustingly profuse hemorrhage with large clots. This was followed on September 30 by such a large hemorrhage that a doctor, called to the house, was obliged to pack the vagina with gauze and transfer her to the hospital.

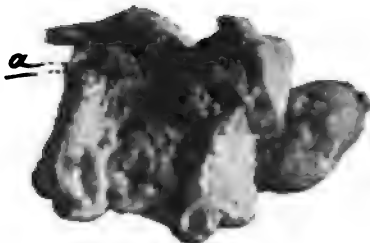
On admission, after removing the gauze, slight bleeding persisted. The vagina was douched three or four times and then repacked, but without benefit. For four days the uterine interior was daily swabbed with 95 per cent carbolic acid, and for nine days more with 10 per cent ferripyrine. On October 25, Prof. Boldt having left the city on his vacation, the house surgeon, Dr. Conover, did a curettage; but in spite of the presence of some foul-smelling tissues still left in the uterine interior, he was obliged, on account of the fearful hemorrhage in

the almost pulseless patient, to suspend the operation and rapidly pack the uterus and vagina to their full capacity with iodoform gauze.

Through the extreme courtesy of my respected chief, Prof. Boldt, the case was to be referred, during his absence, to me in case of emergencies. I found the patient on the following morning, October 26, profoundly anemic, with a temperature range of 100°–102° F. and an extremely small and feeble pulse of 120–130. The packing was saturated with an ill-smelling bloody discharge, and there was no doubt that only radical work, done without delay, could be of any avail.

I was fortunate in having Dr. S. O. Goldan on hand, who kindly proceeded to make an intraspinal injection of cocaine, and thus made it possible for us to dispense with general anesthesia.

While one of the staff injected several quarts of saline solu-



Uterus cut open and showing at a the nodule of deciduoma.

tion into one of the veins at the elbow, I proceeded to do a vaginal hysterectomy as rapidly as possible. According to one of the assistants, who timed the operation, the uterus was removed within seven minutes, although we had to contend with deep adnexal adhesions and an involuntary fecal movement. For nine days after the operation the patient continued having these involuntary movements, which I cannot help attributing to the cocaine anesthesia.

The operation was done with clamps, which were removed after forty-eight hours. Excepting a rise of temperature during several days—which may also possibly be accounted for by the cocaine injection—the patient made an uninterrupted recovery, although she is still (the seventeenth day), because of her debilitated condition, in the hospital.¹ On October 29 the blood

The patient ultimately, when last heard from, had made a complete recovery.

count showed 1,732,000 red cells; on November 5, 1,780,000 red cells and 9,000 white cells.

The uterus was kindly examined by Prof. H. T. Brooks, whose report follows:

MY DEAR DR. BROTHERS:

"Microscopical examination of sections made through uterine tissue and new growth upon endometrium shows in the latter situation a structure composed of irregularly outlined masses of cells in every way corresponding to decidual elements—i.e., very large, polygonal, epithelioid cells with great amount of protoplasm—and large, centrally located, vesicular nuclei, and a slight amount of fibrous basement tissue arranged in bands which divide the cells into more or less distinct nests. The nesting is particularly well marked as the muscular portion of the body of the uterus is reached, where the masses of cells occupy large blood channels. Still further in, toward the peritoneal surface, there is a gradual merging of these deciduoid cells with the muscularis uteri—not sharp line of demarcation as in normal placental attachment. With the exception of occasional small coagula and the fibrous bands above mentioned, all of the new tissue is composed of deciduoid cells. From the decided evidence of muscular invasion by these cells, their arrangement in channels and alveoli deep within the uterine muscularis, and chiefly from their inseparable connection with the normal structures of the body of the uterus, I am inclined to designate the pathological condition as so-called 'deciduoma malignum.'

"Very truly yours,

"H. T. BROOKS."

VAGINAL HYSTERECTOMY;
WITH CASE REPORTS.

BY

CARL STROBELL, M.D.,

Attending Surgeon to the Rutland Hospital,
Rutland, Vt.

PRACTICALLY the operation of vaginal hysterectomy is more difficult of performance than its progenitor, which enters the abdomen along the linea alba. For this reason alone the operation would long since have been relegated to the limbo of

surgical fads, it being natural for workers to seek simplicity of technique. In this instance, however, it has been demonstrated that the more difficult is also the better way in appropriate cases.

Vaginal hysterectomy has been on trial for a sufficient length of time. In its early career it encountered violent opposition in many gynecological strongholds, chief among the objections being the alleged impracticability of rendering the birth canal sufficiently sterile. This delusion has received its quietus. It was said that "the danger of hemorrhage vastly outpointed the increased drainage facilities"; we now know that hemorrhage is rare when the operation is properly performed. The necessity of "working in the dark" on account of narrowness of space, really the most formidable objection of all, was enlarged upon, and with good reason; but recent discoveries and additions to the technique have brushed aside this objection. The danger of pelvic hernia was insisted upon by others, but it has been found of very rare occurrence. It was said that "injury to the intestine could scarcely be avoided," but combined lithotomy, Trendelenburg posture, and a gauze pad placed between the field of operation and the intestine affords not only perfect immunity from injury, but light as well. Thus on all points the opponents of this method have been defeated. Neither could they resist the logic of results. Surgical shock and nausea, usually so prominent in suprapubic celiotomy, were noted to be markedly lessened when the lower route was taken. Not alone was there no breach of the abdominal wall, necessitating the use of a supporter for varying periods, but the predicted breach in the vaginal cicatrix failed to occur. Also, intestinal obstruction following vaginal hysterectomy was found to be of exceedingly rare occurrence, except when clamps, gauze drains, and dams were used, which invite intestinal traumatism and sepsis. Again, in vaginal hysterectomy no mass ligatures were left permanently buried to occasion complicating sequelæ, as in ventral operation. Another valuable point: it is conceded by most authorities that the cause of intestinal paralysis after abdominal operation is "handling of the intestines, their exposure to dry air, and thermal changes." In the vaginal operation properly performed this does not occur, or only in a very limited degree. The intestines are not touched or handled, indeed scarcely seen, and there is hence the minimum of disturbance of the relations existing between different parts of the intestines

and the various mesenteric folds, thus minimizing danger of trauma with its resultant outpour of inflammatory exudates.

Vaginal hysterectomy has its limits, which bounds should not recklessly be exceeded. Degenerated uterine masses reaching above the umbilicus should be attacked from above or by a combination of methods. Malignant disease involving the parametrium, urinary bladder, or walls of the rectum should be left severely alone, or attacked from above through a liberal opening and by a painstaking dissection of involved lymphatic chains, as outlined by Deaver and others. Also, cysts firmly embraced in the folds of the broad ligaments would better be removed by the ventral incision. But conditions less serious can be operated per vaginam.

Vaginal hysterectomy is performed by one of three recognized methods, or slight modifications of them—i.e., American, German, and French. Of these the German method—inaugurated and perfected by Czerny, Billroth, and Schröder—has for its distinctive feature the serial ligation of the broad ligaments, draws the stumps by their attached ligature ends into the vaginal incision, and sutures the peritoneum, including the stumps, in such a manner as to leave these extraperitoneally pending sloughing. This method is more difficult technically than the clamp method. The most surgical and, taking middle ground, as regards ease of performance is the American or "Pratt" method, which undertakes to enucleate the uterus in various ways by gradual dissection, placing ligatures only at bleeding points as they appear, sometimes completing the operation, without placing a single ligature, by use of galvanocautery, angiotribe, or the new electro-hemostatic forceps of Downes, in other instances relying upon careful blunt dissection and torsion wholly; and finally, after any or all of these variations, in clean cases closing the rent in the peritoneum and vaginal vault with continuous suture. The French or clamp method, accredited to Péan and Richelot, applies from two to six hemostatic hysterectomy clamps to the broad ligaments, these being left *in situ* after the operation until the danger of hemorrhage is past, usually forty-eight to fifty hours, when they are removed. Unquestionably the clamp method is the most universally applicable, and safest in the hands of the majority of operators as regards the immediate technique, but it is also the most unsurgical, as has been indicated in the foregoing.

In all these methods the most important anatomical structure

to avoid is the ureter, which if wounded or occluded vastly complicates the operation and menaces most seriously the life of the patient. To obviate this, ureteral sounds are sometimes passed and left *in situ* during the operation, to act as guides; but ordinarily this is not considered necessary and obviously adds the danger of infection of the genito-urinary tract.

Accidental section, partial or complete, of a ureter indicates implantation into the bladder, vagina, or rectum, or the immediate removal of the kidney. Accidental occlusion of the ureter is also an indication for nephrectomy, if fortunately the condition is recognized in season.

In conclusion, a point of extremely practical importance is the view the patient takes of the proposed celiotomy. We all know how very difficult it is for the patient to accept operation when she is informed that she must be "opened," meaning, of course, the ventral incision. It is a terrible thought to her. But tell her that the work will be done from *below*, and it is not at all the same thing; it immediately becomes a simple matter, on a plane with perineorrhaphy or trachelorrhaphy and the like.

In connection with this paper I have two typical cases to report illustrative of the operation, its difficulties, dangers, possible complications, and results: one, in a nullipara, being a carcinomatous uterus in the earliest recognizable stage, involving the fundus and almost entirely devoid of appreciable enlargement or glandular infiltration, with contracted broad ligaments and vaginal canal; the other a border-line fibromatous uterus in a multipara, reaching slightly above the umbilicus and containing within its walls six tumors varying in size from an English walnut to a hen's egg.

CASE I.—Mrs. K. M., age 48 years; married; never pregnant; dysmenorrhea during entire menstrual life; leucorrhea for years; pelvic troubles constantly since marriage; climacteric began four years ago. Family history shows the father to have died of pulmonary tuberculosis, while the mother is still in good health at 80. Symptoms: cancerous cachexia, sacral neuralgia, iliac streak, and a sanious or thin bloody uterine discharge almost continuously for the past year. Examination shows vaginal canal contracted, urethra and rectum normal, cervix hard and small, uterus retroverted, adherent; fundus somewhat enlarged, but hard and sensitive to bimanual. Diagnosis of incipient carcinoma was made and immediate operation advised. After manual divulsion of the

vaginal canal and sphincter ani, followed by curettage, total vaginal hysterectomy was done. Dense old adhesions bound the fundus firmly down in the sacral hollow. When I began the operation it was with the idea of enucleating; but the surgeon truly never knows what he may be obliged to do ere the close of the operation. Contraction of the broad ligaments had so drawn upon these structures as to make it in the last degree difficult to drag down the organ and adnexa within reach. Hemisection was therefore done, then closing the operation with clamps, with which I was enabled to reach more of the possibly infected tissue and with much less risk of subsequent hemorrhage. The lithotomy position combined with moderate Trendelenburg was maintained throughout the operation. The intestine did not in the least occlude the peritoneal opening. No ligature was placed, the pelvic space lightly packed with gauze, and the clamps carefully hedged about with the same material to guard against injury from pressure.

The subsequent history was not alone "uneventful," but "beautiful to contemplate," if I may so express it. Scarcely any pain; only slight nausea for about eighteen hours, after which the stomach tolerated nutrient fluids; the distressing thirst so prominent in abdominal work was almost absent; scarcely any evidence of surgical shock, and by the evening of the day following that of the operation it would have been difficult for a casual observer to believe that the patient had recently undergone so serious an operation—eyes bright, smiling, laughing, and even wanting to know how soon she might "go home." And she could easily have gone by the end of the first week, but for politic reasons I thought best to keep her confined for three weeks simply for the good the rest would do her. The hysterectomy clamps were removed at the end of forty-eight hours. Free oozing occurred, somewhat alarming, and, fearing trouble, preparations were made for search upon the operating table, but by the time all was in readiness to proceed the flow ceased. The gauze packing or drain was removed bit by bit daily, until by the fifth day the last was taken. Bichloride vaginal irrigations were instituted on the third day, and these always followed with sterile water. The patient was dismissed at the end of the third week. Seen four months later, she seemed to be perfectly well and in the best of spirits.

CASE II.—Mrs. D.; white; American; age 48; multipara;

ancestors free from malignant affections; gives history of very frequent and exhaustive hemorrhages, evidence of which is quite apparent in the anemic, emaciated, and generally debilitated aspect. Upon physical examination in dorsal decubitus the lower segment of the abdomen was seen to protrude as in the fifth month of gestation. Superiorly and laterally the abdominal walls form slightly sloping pouches. The superior boundary of this protuberance is marked by the umbilicus. Upon palpation a firm, dense body is felt, slightly nodular yet roughly symmetrical, somewhat elastic in the intervals between nodules, the mass being quite movable and free from tenderness. Percussion yields absolute flatness. Examination shows a very badly damaged perineum, relaxed vaginal walls, and a deep cervical tear extending into the left parametrium. Bimanually palpation proved the mass to be the nodular uterus, with motion limited in all directions by its augmented bulk. The urinary bladder was found to be the seat of chronic inflammation. No marked enlargement of the pelvic lymphatic glands could be detected. The adnexa could not be satisfactorily palpated. Depth of uterine cavity was seven inches. Motion of probe within cavity was extremely limited, its presence provoking hemorrhage. Diagnosis of intestinal uterine fibroids was made, while the hemorrhages furnished an imperative indication for operation. Considering the age of the patient, preservation of any portion of the uterus or adnexa was not considered. Of routes, the choice fell upon the vaginal, as being, in her case, the safest, all things considered, and mainly because the author had a premonition amounting to a certainty that in this case the suprapubic operation would prove fatal, as happened to him in a strikingly similar one some two or three years ago. This decision was reached with due appreciation of the difficulties to be encountered in this typical border-line case for vaginal hysterectomy, as no operator advocates removal of solid growths per vaginam, wherein the northern border reaches beyond the umbilicus. After absolute rest in bed for one week, total vaginal hysterectomy was done, and necessarily by the clamp method. Beginning, the hand was first gradually forced into the vaginal tract, then alternately clenched and relaxed in all positions until the canal was thoroughly patulous, being careful, however, by taking time, to avoid traumatism. The sphincter ani was then divulsed, next the uterus rapidly curetted and packed with gauze. Grasping both lips of the cervix with traction forceps, the cervix was next encircled with the scalpel

about a half-inch above the plane of the os and Doyen's half-inch lateral incisions made. The bladder was with very great difficulty peeled from the anterior wall of the uterus, but not wholly without mishap, as a transverse tear occurred despite the utmost precaution, due probably to the attenuated or friable condition, combined with the difficulty of making effective traction upon a mass too large to pass through the inferior strait of the pelvis.

As soon as the anterior peritoneal pouch was entered the beak of a broad vaginal retractor was introduced under the pubic arch and into the peritoneal cavity, in a manner to hold the bladder well up out of harm's way. The postperitoneal pouch proved less difficult of access. Capillary oozing was somewhat free. Enucleation was proceeded with until the uterine arteries could be plainly felt in the bases of the broad ligaments. Hysterectomy clamps were then placed snugly against the uterus, including in their grasp the lower segments of the broad ligaments, thereby securing the uterine arteries. Section of the tissue between the forceps and the uterus up to the ends of the beaks was next done. At this point it became absolutely impossible to drag the uterus down any further. Passing now one blade of two traction forceps into the cervix on each side and locking them, under lateral traction the cervix was bisected and the anterior wall of the uterus divided upward and outward on each side in the direction of either ilia, thus forming a wedge, the base being at the fundus, the apex pointing downward into the vagina. Morsellation was now employed. Strong traction forceps brought the tissues within reach in hand-over-hand fashion, always fixing one well above the other before the lower morsel was excised. When one-half the wedge-shaped piece had been removed a fibroid the size of a hen's egg was encountered. This resisted evulsion and was removed in sections. The next fibroid was grasped and twisted out of its bed. At the fundus a small subperitoneal tumor was removed. Sufficient space having now been gained, a second pair of clamps were placed above the first, on either side, and again the intervening tissue was divided. Soon the fundus was anteverted and dragged down sufficiently to permit completion of bisection of the posterior uterine wall. One half of the divided uterus was then thrust back into the pelvis, while the other was drawn down, bringing the adnexa into view and within reach of the third set of clamps, which were applied from above downward, and the section completed. The remaining half was similarly treated.

Hemorrhage was practically *nil*. A few silk interrupted sutures united the edges of the rent in the bladder, a retention catheter placed, and the patient put to bed. The operation consumed ninety minutes. The tumor mass with its six fibroids weighed four pounds. Shock was somewhat severe, but the patient rallied well. Nausea was quite troublesome for about four days, brown vomit appearing and stomach rejecting everything. Considerable pain until clamps were removed, which was at the end of fifty hours. Bowels acted quite freely by the end of the third day, when all the symptoms were ameliorated. Convalescence was retarded considerably by the bladder complication. Patient, however, made a good recovery. Two months later she reported herself well, except for some irritation about the bladder, and slight leakage of urine per vaginam if the bladder was allowed to become greatly distended. This condition will require further operative interference. That this case would have died had the shock been more severe, as would have been the case had the ventral operation been done, I have not the slightest doubt.

23½ MERCHANTS ROW.

CORRESPONDENCE.

ERYTHRISM FROM EXTERNAL STEM PESSARY.

TO THE EDITOR OF THE AMERICAN JOURNAL OF OBSTETRICS, ETC.

DEAR SIR.—I would like, through the JOURNAL, to ask a question of the gynecologists of the country.

A patient whom I have known for some time, a quiet, respectable single woman, tells me that some seventeen years ago a doctor inserted a hard-rubber cup and stem pessary with an external girdle attachment. The movements of the pessary over the walls of the vagina in moving the body and in change of posture, as in sitting down, "seemed to work her" and produced an intense sexual excitement from which she suffered as long as she wore it.

I had not known of this danger connected with the external stem pessary, and I am anxious to hear personally from any of your readers who have had a similar experience related to them.

Yours truly,

H. A. KELLY.

1418 EUTAW PLACE, BALTIMORE, MD.

TRANSACTIONS OF THE SECTION ON
GYNECOLOGY OF THE COLLEGE OF
PHYSICIANS OF PHILADELPHIA.

Stated Meeting, November 15, 1900.

The President, JOHN B. SHOBER, M.D., in the Chair.

DR. GEORGE ERETY SHOEMAKER reported

I. LOOSE BODY IN PERITONEAL CAVITY. PROBABLY OVARY.

II. DERMOID CYST IN FRONT OF THE UTERUS.

III. CARCINOMA AND FIBROMA IN THE SAME UTERUS.

H., age 27; married; three children, one miscarriage. Menstrual history normal. Complained of frequent painful bowel movements, pain in the back and bladder, frequent urination and bearing-down, chronic indigestion, and symptoms which may be referred to the following diagnoses: retroversion of uterus with descent; laceration of perineum; fissure in ano; cystitis, chronic colitis, and proctitis; gastritis.

She had been treated by lavage of the stomach and other measures without decided improvement in the general condition. Examination showed very marked retroversion, which, when corrected and pessary introduced, apparently greatly relieved abdominal distress. For this reason permanent restoration of the uterus was advised by suspension, with repair of the perineum and appropriate treatment of the fissure.

At the operation the perineum was repaired in the usual manner. On opening the abdomen for the suspension a small kidney-shaped body, about the size of a normal ovary, was found perfectly free in the peritoneal cavity near the fundus of the uterus. The right ovary was filled with follicular cysts, which were punctured; both tubes were normal. No ovary could be found on the left side, though careful search was made. A very small area of capillary injection, less than half an inch in diameter, on the posterior surface of the broad ligament, resembled a point of a detached adhesion, but no other site could be discovered from which an ovary could have been separated. If separated here, it must have been by examination before operation. The appendix was excised, as it was very long and showed a low degree of inflammation in its walls. The uterus was suspended and the abdomen closed in layers in the usual manner.

The patient recovered from the operation and was greatly improved by treatment, which was also directed to bowel and bladder.

The loose body is kidney-shaped, and in its present state, after several months in formalin solution, is $1\frac{1}{2}$ inches in length, $\frac{1}{2}$ inch in diameter, $\frac{3}{8}$ inch in thickness. It feels as though calcified, except at two points, one-eighth of an inch or more in diameter, which appear cystic and resemble Graafian follicles.

Loose bodies in the peritoneal cavity are sometimes found post mortem, and are said to be usually made up of lymphatic gland tissue. There is no doubt that the ovary, when degenerated, may form attachment to distant structures and its own pedicle be gradually attenuated.

A case was reported by the writer several years ago¹ where a dermoid cyst of the ovary had crossed the abdomen and was adherent to the omentum near the liver, its only attachment to its former site being a slender Fallopian tube which was eleven inches long. In two other cases in the writer's hands the blood supply had become so far attenuated or impaired by inflammatory disease that no ligature was required for hemorrhage on separation.

II. DERMOID CYST IN FRONT OF THE UTERUS.

C., age 30; patient of Dr. Appgar; married; one child, one miscarriage. Postpuerperal inflammation; one attack of pelvic peritonitis since. Tumor discovered six years ago. Chief complaints, pain in both sides, increased by exertion, irritable bladder.

The tumor was found occupying the median line in front, low down between the anterior wall of the uterus and the bladder. It was firm, rounded, and apparently contained fluid. Diagnosis was made of a pelvic tumor, probably cystic, which did not involve the bladder. Its origin was unknown.

At operation by abdominal section a dermoid cyst of the left ovary, about four inches in greatest diameter, was found firmly adherent to the bladder in front and to the anterior surface of the uterus behind. It had grown downward between the bladder and uterus, undoubtedly after adhesions had formed in its upper portion. It was removed, and the patient made an uncomplicated recovery.

III. CARCINOMA AND FIBROMA IN THE SAME UTERUS.

S., age 56; married; children denied, but perineum lacerated; seven miscarriages at three to four months of gestation. No other symptoms and no lesions which might suggest syphilis. Some, at least, of the miscarriages induced. No postpuerperal inflammatory history and no history of peritonitic attacks. Stopped menstruating at 54, two years ago; one year later began again to bleed, and has bled a little nearly every day since, now about one year; quantity greatly increased past five months.

Severe pain crises in lower abdomen for past five months. Patient states that she has these nearly always in the

¹ Annals of Gynecology and Pediatrics, March, 1891.

afternoons, and morphia has been freely taken, constituting a habit. Urine examination reported negative, but said to have had nephritis for years.

Examination.—No emaciation, no cachexia, but somewhat anemic. Perineum lacerated to sphincter. Cervix small, not hypertrophied or infiltrated, apparently perfectly normal. Round, smooth, slightly movable tumor involving uterus, filling Douglas' cul-de-sac, and extending into abdomen; outline irregular; evidently a fibroma with one nodule locked in pelvis.

Operation.—Tumor adherent; no signs of malignant infiltration. Removed by ligation of vessels and amputation of cervix at internal os in the usual manner, as the tumor was supposed to be simply fibroid. It was laid open, after removal, by a spectator, and the evident presence of malignant disease of the endometrium near the fundus was disclosed. The stump of the uterus was therefore at once excised from its vaginal attachments, gauze packed from above into the vagina, the peritoneum closed over the gauze, and the abdominal wound sutured. The bowels moved freely on the second day, but the patient died on the third. The kidneys acted well at first, but the urine was suppressed in the last twelve hours, the temperature also rising to 106° just before death. Nephritis was present, as casts and albumin were both now found; no postmortem.

As will be seen by examination of the specimen, the fibromatous portions of the uterus are not infiltrated by the cancer, which springs from the endometrium near the fundus. This is said to be usually the case, malignant degeneration of the uterine fibroma being extremely rare. Only one sign or symptom might have made a diagnosis of malignancy tenable. After the occurrence of the menopause, bleeding began and continued.

DR. C. P. NOBLE.—The first case reported by Dr. Shoemaker reminds me of one which I reported some time ago, in which I operated; my memory is not entirely positive, but I rather think the operation was for a pus tube on one side. As the toilet of the peritoneum was being completed the omentum was pulled out to wash it, when a body was found lightly attached to the omentum; and in considering what this could be, a careful search was made on the other side of the pelvis and no ovary was found. The tube also was only half there. Evidently a torsion had taken place, and not only the mesovarium but also the ends of the tubes had separated, and the ovary became attached to the omentum and derived its nourishment therefrom.

With reference to the other case reported by Dr. Shoemaker, fibroid tumor of the uterus with carcinoma of the body, I have seen five or six cases of this kind. The last one I saw to-day. This was a very interesting case because of the very great change which had taken place in the last few weeks. Five weeks ago, when I was called to see the patient, a

sloughing fibroid tumor was being extruded from the cervix. The woman was 55 years of age; had passed the menopause rather later than usual. She had been having pain with some bleeding for about a year. Examination had been refused, which was finally made by the family physician with diagnosis of cancer of the uterus. To remove this I was called in.

Owing to the condition, I did not think it proper to do more than remove the sloughing fibroid at the initial operation. This was done, the patient curetted, and a good recovery followed. The scrapings of the tumor were examined and found to be adenosarcoma of the endometrium. The tumor itself was a fibroid which was necrotic. At the time of operation the right broad ligament was absolutely free from possible infiltration and was perfectly movable. The left broad ligament had some suspicion of infiltration. To-day, when I returned to do the hysterectomy. I found the pelvis absolutely involved, so that both broad ligaments were completely fixed. There was also an adenosarcoma, presumably, as large as an English walnut, growing on the posterior wall of the vagina where the speculum had made an abrasion. Apparently it was a case of implantation of cancer some five weeks ago which had already developed to at least an inch in diameter. I have never before seen such a rapid growth of cancer. Another very curious situation to-day was that when I reached the house I was told that the patient had not been passing urine as freely for some days. When the nurse attempted to catheterize the patient she was unable to get the catheter into the bladder. The patient was anesthetized, with the idea of the catheterization being done on the table, when it was found that there was no urine to be drawn off. The patient had suppression of urine since yesterday. It is hardly necessary to say that under the circumstances I did not do a hysterectomy.

I will not detail the other cases. I have seen as many as five, and I think that every operator of experience has reported a number, so that it is evident that the condition is by no means rare. In a definite percentage of cases of fibroids, allowed to pursue an ordinary course for years, carcinoma will develop in the fundus. It is very difficult to say that there is a relation of cause and effect, but it is suggestive that adeno-carcinoma is relatively much more common as a complication of fibroid tumors as compared with epithelioma of the cervix. When you compare the relative frequency in general with fibroid of the uterus, as in epithelioma of the cervix, it is more common than carcinoma of the body, whereas in particular cases of fibroid tumors carcinoma of the body seems to be more frequent than epithelioma of the cervix.

My own experience is that I have seen four cases of epithelioma of the cervix and five or six of carcinoma of the body. It is suggestive that there may be some relationship between the existence of the fibroid itself and the development of the carcinoma of the body.

DR. B. F. BAER.—The first specimen which Dr. Shoemaker presented is very interesting. It is probably an ovary, but it will take a microscope to decide. I have never met with an entirely detached body in the abdominal cavity, but in several cases a tumor had become separated from its natural position and had formed an adventitious attachment from which it received its nourishment. In one instance a dermoid tumor was rolled up in the omentum, only a trace of an ovary showing at its proper anatomical position. The tumor, nearly as large as a cocoonut, was somewhat kidney-shaped and very mobile, and the diagnosis was only decided after abdominal section.

The third specimen, that of uterine fibroid associated with malignant degeneration of the body of the uterus, is of more practical interest. I have had considerable experience with such cases. I wish to speak especially upon the technique of the operation required in malignant disease of this character. Dr. Shoemaker has informed us that he made total extirpation of the cervix in this case, and that the patient died on the third day after the operation.

Did the removal of the cervix, by prolonging the operation and opening deeper channels for sepsis, contribute to the fatal result?

Was it necessary to remove the cervix to eradicate the disease?

For some years I have operated upon cases of malignant disease of the corpus uteri by the supravaginal method: first, because the patient is more likely to recover from the operation; and, secondly, because the cervix does not appear to be involved when the body of the organ is the seat of the disease. My experience, at least, would seem to support this course. Altogether I must have had ten or twelve such cases.

The first case of this character was operated in 1893, and Dr. Erk, who I see is present, assisted me at the time and will doubtless recall the case, a patient of Dr. Feldstein, of this city. The diagnosis was multiple fibroma of the uterus, with the unusual symptom of sharp and excruciating pain during the previous few months. The patient was very fat. As a preliminary to the proposed hysterectomy, I began curettement; at once I broke into a friable mass, and such an alarming hemorrhage occurred that I tamponed the uterine cavity and proceeded with the abdominal section, concluding the operation by making supravaginal hysterectomy, intending to remove the cervix later, although it appeared healthy. The patient made so good a recovery, and has remained so well since, that further operation has not been necessary. I have not seen her in two years, but I have no doubt she is well at this time, or I would have heard of it.

The specimen showed, in addition to several fibroids in the uterine wall, a tumor projecting into the uterine cavity from the fundus. This tumor gave the macroscopic appearance of malignant degeneration of a fibroid. Whether it was a sarcoma, a malignant adenoma, or a carcinoma existing in

association with the fibroma, I do not know. But I do know that the result has proved that the operative technique pursued in this case was the correct one. It was a lesson I did not forget to apply in the subsequent cases. They all recovered from the operation, and I believe I am justified in stating that they all are alive at this time, with the exception of one. Strange to say, in this one I removed the cervix four weeks after the primary operation. She died six months later, from a return or continuation of the disease.

Another case, sent to me by a gynecologist of a neighboring city, is worthy of special mention here. The patient had two large tumors, correctly diagnosed as ovarian and uterine, and probably malignant. She was emaciated and the operative outlook unpromising. There was a fetid uterine discharge, but the cervix appeared healthy. The operation was begun with the intention of making final total extirpation of the cervix. The ovarian tumor was found to be a semi-solid sarcoma, and so deeply attached that the operation proved a most formidable one, before we were ready for the hysterectomy. The uterus was as large as at the fifth month of pregnancy, and malignant-looking. To save time and unnecessary wounding of tissues, I concluded the operation by making supravaginal amputation, leaving the cervix for a later operation. The patient made so good a recovery and has been so perfectly well since 1895, the year of the operation, that she has the cervix yet.

Do you wonder that I prefer supravaginal hysterectomy to total extirpation as a life-saving procedure when the cervix appears healthy?

DR. SLOCUM.—I would like to ask Dr. Baer if the disease had progressed further in the last case, the one which was followed by the fatal result.

DR. BAER (replying to Dr. Slocum).—The patient was more cachectic. She showed more evidence of malignant disease.

DR. J. M. BALDY.—What Dr. Baer has said calls to my mind several instances of my own which up to the present time I have thought of with more of mortification than otherwise. In two or three cases of cancer uteri I have done supravaginal operation. In one case the operation was done through an abdominal incision without realizing that I was dealing with cancer of the fundus. In one case the patient had had another surgeon do a double ovariectomy. She continued to bleed, and passed into my hands. I looked at the case as one of subinvolved uterus or fibroid of the uterus. I performed hysterectomy, freeing the adhesions and removing the uterus, without questioning my diagnosis. The possibility of cancer never occurred to me. After the operation I was mortified to find a beautiful specimen of adenocarcinoma in the fundus. I thought, rather than re-etherize her in order to remove the cervix, I would watch her carefully, and later, if there was any indication of return, I would remove the cervix. The operation was done two or three years ago and there has not yet been any return. Since that time I have had two

other such operations and my experience has been that of Dr. Baer, without return of the disease. If the fundus is amputated below the internal os, it does not seem unreasonable that there might not be a return of the condition if the operation is done thoroughly. I shall not, however, keep any less close watch on such patients, but feel encouraged that in these cases, at least, the operation has proved a safe one. If we could be assured of this the operation would be of especial advantage in very stout women. I have recently had a couple of such total hysterectomies under such circumstances and am not apt to forget them. If the uterus can be amputated, that which is an exceedingly difficult operation is made comparatively simple and easy. I would not like to advise this method, even after the experience of Dr. Baer and myself, excepting possibly in the hands of a very few who realize fully the risks and could have the patients under such absolute control that the cervix could be removed at any time. The dictum to make complete removal in all organs affected with cancer is a safe one.

DR. BEYEA.—I am reminded of a case operated on by Dr. Penrose in which the cervix was left and in which the patient remained well. There was early beginning malignant adenoma, not extended to the cervix. I think the history shows that carcinoma of the fundus does not grow in the direction of the cervix, but toward the peritoneal surface, and is usually imparted to the muscular wall. Only in advanced cases does it reach the peritoneum.

The specimen of the free body in the peritoneal cavity suggests to me a possible origin. I understood Dr. Shoemaker to say that the ovary had disappeared and that there was some indication of adhesion. The case reminded me of a patient operated on last year. On one side there was a large fibroid; on the other side was a small tumor about the size of a small walnut, which I considered a teratoma. It was composed of a small amount of bony tissue with a membranous capsule and filled with material which I think this specimen is probably filled with—a calcareous product. It seems to me that possibly this is a small dermoid. We all know that dermoids can be very small, and that, calcareous change having taken place, this could become a solid body. It seems to me reasonable that a twisted pedicle has left it free in the peritoneal cavity. I think it is a very good thing, in studying these specimens microscopically, to cut the sections through the tumor. There is a little portion on the surface of the tumor which looks like the remainder of a corpus fibrosum with some little ovarian tissue. We look for the presence, in the inner sections, of squamous epithelial cells or the changes found in the dermoid cystoma.

The case which I referred to I have been careless about and have not made a careful microscopical study of the specimens, but I hope to report it soon, and expect to find in it the usual changes found in very rare cases of teratoma, which are usually malignant.

DR. CHARLES P. NOBLE.—I had occasion to operate upon a woman several years ago who had a moderate-sized ovarian tumor and moderate-sized fibroid tumor with dense adhesions. The patient was fat and was anemic, having bled a great deal. I had supposed that the bleeding was due to the fibroid, and I was very careful to finish the operation as quickly as possible. I had no idea before or after the operation that the patient had cancer. A few months subsequent to the operation the family physician wrote me that the patient was having hemorrhages. On examination I found that not only the cervix but the upper part of the vagina and both broad ligaments were greatly infiltrated with cancer. It was evident from the promptness of infiltration that there was cancer at the time of operation.

It is my judgment that, although Dr. Baer's experience has been so happy, the operation done by Dr. Shoemaker, other things being equal, is the better of the two—that is, the total hysterectomy as against the amputation. I believe, as has been said by Dr. Baldy, that in very fat women, particularly if they are anemic, having poor hearts and poor resistance to infection, it would sometimes be better to amputate the cervix, even though we intended to take it out later, to keep the patient from dying from the primary operation. Certainly, when a patient's condition warrants, it is more in accord with the teaching of sound surgery to remove the whole organ which is the seat of cancer than to remove a part. This is the only case of hysterectomy which I have done, either for fibroid tumor or for inflammatory disease, in which subsequently there has been cancer of the cervix or pelvis, although the number, of course, runs into the hundreds. That, I think, is of interest in connection with what is so often claimed with men who leave the cervix, that only a definite percentage of them become cancerous.

DR. J. M. BALDY.—I would like to ask Dr. Noble to state a little more definitely to what class of cases he referred in his report of hundreds of operations in which cancer had not returned.

DR. NOBLE.—Answering Dr. Baldy's inquiry, I referred to hysterectomies for fibroid tumors or for inflammation. I might say, however, that of all the cancers of the body of the uterus so operated on and recovered from the operation, none have had recurrence.

DR. ERCK.—I merely want to mention a case on which I operated ten days ago, of sarcoma of the uterus, which illustrates the advantage in the technique in cases where the cervix can be left, temporarily at least, when the fundus is the seat of malignant disease accompanied by profuse septic discharges, and where the patient's condition prohibits prolonged anesthesia. The uterus was enlarged to about the size of a six months' pregnancy. The patient was very feeble, she was 63 years of age; her temperature was high and there was a profuse and extremely foul and offensive discharge. The patient was very ill, and on account of her condition I did not

want to take the time to sew up the cervix. I therefore did a supravaginal hysterectomy. Had I done a complete hysterectomy there would have been much liability of infecting the abdominal cavity through the large opening in the vaginal vault. The amputation was made low, and just before cutting into the cervical canal, about half an inch in diameter, a large clamp was placed above the point of section, thus preventing the escape of the foul discharge into the abdominal cavity, and the patient made a good recovery. The cervix is convenient for removal subsequently, should that become necessary.

DR. SHOEMAKER (closing).—My own experience has been quite in accord with that of the other gentlemen who have spoken regarding malignancy of the body of the uterus. Extension is not toward the cervix, and in some cases of very advanced cancerous involvement of the fundus where I have performed vaginal hysterectomy the cervix was still entirely free from disease. However, I believe it is unsafe to depend on this tendency, and I believe we should remove the cervix if the case admits of it. In a case of a colleague of mine, cancerous disease later invaded the cervix, which had been allowed to remain after supravaginal hysterectomy, and after an attempt to remove the cervix very rapid death occurred from extension.

DR. J. M. BALDY presented a case of

ATRESIA OF THE UTERUS.

Early in the fall the patient, age 33 years, consulted me for long-standing bad health. She had been married for six or more years and remained sterile. Her history was somewhat obscure, in that she assured me she had never menstruated, while her husband informed me that his wife was mistaken in this, as she had some years ago menstruated normally, then became irregular and scant, and finally ceased altogether to have a flow of blood. This condition had lasted for some years (four or more). During this period, each month, or at intervals of two and at times three months, there was an apparent effort at menstruation, the patient suffering great pain and nervousness. At first the suffering was confined to the attempted period, but after a while the nervousness began to last longer and longer, until latterly there was no interval of repose, and she became a nervous wreck, with an intense horror of each coming period of pain. At the time of my seeing her she was a broken-down neurasthenic.

An examination disclosed an apparently normal cervix, a large fundus, with appendages enlarged and evidently adherent. An operation to remove the pelvic organs was advised, with the idea of establishing the menopause and thus breaking up the periodic routine of pain.

The operation was carried out at the Gyneccean Hospital as advised, the ovaries, Fallopian tubes, and uterus (amputated below the internal os) being removed by abdominal section.

The uterine appendages were found enlarged and adherent. The left tube was distended with a half-ounce of tarry substance like in appearance to old menstrual blood, and no doubt was such. The uterus contained a fibroid tumor the size of a walnut, subperitoneal. On cutting open the uterus freely it was found that the cervical canal had become obliterated in part of its length. Both openings into the Fallopian tubes were obliterated and more than half of the uterine cavity itself was in a condition of atresia. The mucous membrane in the uterus which was present was apparently in a condition of advanced atrophy and had long since ceased to functionate. The specimen, which is herewith presented, speaks for itself, and its condition fully explains the symptoms from which the patient suffered.

The cause of this extensive atresia is not known. A very careful talk with both the patient and her husband failed to disclose the history of an inflammatory attack of sufficient violence to be recalled by either of them. Nor could they remember her having an attack of illness of a general febrile character, nor is there a history of any serious mucous membrane affection in any other part of the body. There is no reason to believe that either gonorrhea or syphilis existed, although such attacks cannot be absolutely excluded in any case.

The etiology of the trouble is obscure, yet it was surely an acquired condition and wrecked the whole life of the patient. The treatment applied is the only one which gives promise of success in similar cases, which are fortunately rare.

DR. BALDY also presented a case of

CESAREAN SECTION FOR CANCER OF THE RECTUM.¹

DR. NOBLE.—The case of atresia is one of very great rarity. I myself have never seen a case of atresia of the uterus in a woman of the age reported by Dr. Baldy. The only cases I have seen have been in older women with cancer of the cervix and in several cases where there has been large pyometra, the blood being retained by the closure of the cervix. I recently had a case of atresia of the vagina. A girl 15 years of age was sent to me who had a tumor in the hypogastrium. She had never menstruated. When 9 years of age she had had a bloody discharge, for which local treatment had been ordered, and it had shortly ceased. When she became 13 or 14 years of age she began to have symptoms of menstruation, but lost no blood. On examination the lower third of the vagina was found to be patulous, and then the finger came in contact with an obstruction, above which there was a large mass, on the top of which mass one could feel the uterus. It was evident that there was retained blood in the upper two-thirds of the vagina. I had supposed on my first examination of the patient that it was a case in which failure of atrophy had caused the two parts of the vagina to coalesce. At the operation I concluded that that was a mistake; the atresia was too high up.

¹ See original article, p. 58.

No doubt that when this girl had hemorrhage at 9 years of age some accident to the vagina had happened. The epithelium had exfoliated and the two walls of the vagina had become adherent, and at the time for menstruation there was no exit for the blood. After dividing the atresia the blood escaped, and the patient made a good recovery.

DR. G. M. BOYD.—I have been much interested in the second case of Dr. Baldy, the Cesarean section complicated by cancer in the rectum. I saw this patient in consultation three or four weeks before the operation. I found her in the same condition which Dr. Baldy describes, but did not get the history of the possibility of a previous ectopic gestation. The patient was in a bad shape. I had occasion to leave the city the next day and expected or hoped to operate upon the patient on my return. On my return I found that she had gone from bad to worse, but had fortunately fallen into the hands of my good friend Dr. Baldy. I congratulate him upon the result. The only criticism that I have to make is in the operation that he selected. It seems to me that I would have done a celiohysterotomy in preference to the celiohysterectomy. In this way I think I could have with more rapidity and ease opened the uterus, emptied the contents, and closed the small incision that would have been essential for the removal of so small a child. I am very glad to hear that the baby is doing nicely.

Clinical report by Dr. George E. Shoemaker:

PREGNANCY IN SEPTATE UTERUS.

In a case of septate uterus in which, five years ago, I freed adherent appendages, removed one tube and ovary, curetted and suspended the uterus, the woman has since been safely delivered of a healthy child. She had been pregnant once before since the operation, but aborted about the sixth month. I had an opportunity to examine her during that pregnancy, when the unimpregnated half of the uterus could be outlined with the greatest ease at one side of the base of the enlarged impregnated half. The parents, who now reside in South Dakota, have been extremely anxious to have a child. The suspension was made to a point on the septum where the two halves united, and was purposely made in front that pregnancy might not be interfered with.¹

CERVICAL CANCER.

DR. J. M. BALDY.—This specimen of cervical cancer, in the recognition of which I was just now, as I removed it from the jar, a little puzzled, illustrates how thoroughly curettement can be done in malignant cases. On that cervix there was a large bleeding and proliferating growth in which the diagnosis of cancer was perfectly plain to the touch; and yet after two and a half weeks of preliminary curettement there is hardly a macroscopical trace left.

¹ See Medical and Surgical Reporter, April, 1897, Case 8.

There was a similar condition in the uterus of a patient from whom I removed the uterus a week ago. The specimen removed by curettage was reported from the pathological laboratory to be malignant. Hysterectomy was performed a week later. After cutting the uterus open the original seat of the disease could readily have been overlooked, had it not been looked for especially, the curettage had been so thorough.

The two cases illustrate how thoroughly the operation of curettage can be done in these cases and what good, clean, healthy surfaces can be gotten. This, however, is not advanced as an excuse for not removing an organ the seat of carcinoma. I simply wished to draw attention to how quickly cicatrization and healing took place following a thorough curettage.

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.

Stated Meeting, November 16, 1900.

The President, REUBEN PETERSON, M.D., in the Chair.

Exhibition of Specimens.

ELONGATION OF THE POSTERIOR CERVICAL LIP.

DR. EMIL RIES.—This condition is not a rare one, but it is apt to puzzle the general practitioner. The patient's husband, a physician, made the wrong diagnosis of prolapse of the uterus. Instead of this it is an elongation of the vaginal portion. It is a somewhat peculiar case, because it is not an elongation of both lips, but only of the posterior lip. The lady was 35 years old, had one child eight years ago, when she had a laceration of the cervix and perineum. Both were sutured, but did not heal. A year afterward she developed symptoms simulating prolapse. On examination I found this elongation of the cervix, which was cured by amputation of the cervix.

OPERATIVE DIFFICULTIES IN THE TREATMENT OF FIBROIDS.

These are specimens from a number of cases of uterine fibroids which show the various operative difficulties met with in the treatment of these cases. The first one was removed from a woman 43 years old. She had several children, the last one thirteen years ago. When she entered the hospital she complained of difficulty in urinating, constipation, and remarked that the bowel movements were ribbon-shaped; she also had a feeling of fulness in the pelvis. On examination I found a tumor protruding into the vagina behind the cervix. The cervix was high up behind the horizontal ramus of the pubic bone on the right side. The fundus could be felt at the

height of the umbilicus, and in front of the fundus a large tumor. The mass protruding into the vagina was not connected with this tumor, neither was it of the consistence and shape of a fibroid. It appeared to be an irregular swelling of the appendages, probably a pus sac.

I performed laparotomy and found the fundus of the uterus behind and to the right of this large tumor. The right tube dipped down behind the fundus, disappearing in an irregular mass. In front of the uterus was this large tumor, which was connected with the anterior surface of the uterus, from the insertion of the vagina up to about the height of the internal os, and was located in this pouch of the anterior uterine wall, which now appears very much smaller than it originally was. I enucleated the tumor from the uterus, in order to save the latter, if possible. This was impossible, however, because in removing the tumor it appeared that the anterior wall of the uterus was so impaired that it would not have been safe to allow the uterus to remain. Following the right tube down, we found the pus cavity connecting with the end of the tube, which, however, is not occluded. She had a slight rise of temperature before the operation, and also had some chills, but there was no distinct history of a salpingitis or infection. The last confinement had been years before the operation. We found considerable adhesions behind the uterus, and, together with her history of constipation and the pressure of the tumor in the pelvis, almost entirely filling it, it appears possible that this is one of those cases where, in consequence of pressure against the bowel wall, the migration of organisms though this, this inflammation behind the uterus is produced and also the adhesions between uterus and rectum.

The tumor is a simple fibroid, which was edematous. There are small cystic and transparent gelatinous areas in this tumor, but no large cysts of any size.

The second fibroid was from a colored woman. It reached up to the umbilicus and appeared to have no adhesions, so that I decided to remove it by morcellement through the vagina. I succeeded in removing the entire tumor in this way. I put all the pieces together in this sac, and when you examine the individual pieces you will see that I enucleated small fibroids wherever possible, and that in other portions of the uterus I cut V-shaped pieces out of the uterine wall. The patient is perfectly well to-day.

In this third case I intended to do a vaginal operation, but met with an unexpected difficulty. After having worked on the anterior uterine wall quite successfully, and having removed a large portion of the uterus by morcellement, I at last came to a portion which I could not cut, because it was calcified. I then tried to enucleate the calcified fibroid, but found such sharp edges that I began to fear for the integrity of my very necessary fingers, and therefore changed the method of procedure. I had my assistant hold down the uterus while I turned the patient around and did a laparotomy. As soon as

this was done the assistant let go the instruments in the vagina. I took hold of the broad ligaments, and all hemorrhage was stopped immediately. The balance of the uterus was removed through the abdomen, and the patient is now in very good shape. In the case of the large fibroid I used Doyen's method of separating the cervix from the surrounding tissue, incising the posterior vaginal wall from the peritoneal cavity, cutting through the cul-de-sac, pulling the cervix up, and cutting from below in order to separate the cervix from the bladder without injury to the latter. This was especially useful in this case, because the tumor extended in between the bladder and uterus, and there was some difficulty in finding a good line of cleavage in front. By opening the vagina from behind and holding up the cervix, the separation of the latter from the bladder was accomplished without injury to either bladder or uterus. In the case of the calcified fibroid I did an inverted Doyen—that is, having opened at first through the vagina, the cervix could be seen through the abdomen as soon as the bladder was held forward. I took hold of the cervix, pulled it up and cut from beneath, so that I cut the uterine arteries on both sides before I cut away the tumor entirely from the ligament.

This next specimen is interesting not so much for the size of the fibroids as on account of their development. This patient had both appendages removed, apparently completely, by some country practitioner. In spite of their removal she subsequently had hemorrhages. She also had fibroids in the uterus, although, for all we know, they may have been present at the time of the removal of the appendages. Dr. Rumpf removed the uterus, and I got it for examination. At this posterior cut in the wall of the uterus I discovered a little cyst. I removed it, and on examination found it to be a little follicle embedded in normal ovarian tissue. When the appendages had been removed for the inflammatory disease they were adherent to the uterus and surrounding organs, and in taking out the appendages the operator left a little piece of ovarian tissue, which was able to produce perfectly normal follicles with normal ova and was sufficient to keep up the menstrual function. The size of the fibroids is not sufficient to explain hemorrhages, especially as they are subserous, but the existence of this little ovarian tissue fully explains the hemorrhages. You can see macroscopically that this piece of tissue is whiter than the uterine tissue.

We do not know how often it happens that in apparent complete removal of the appendages little pieces of ovarian tissue are left behind, but we do know that in many cases not only do fibroids grow, but the menstrual function continues. In a few cases, three of which have been published in the American literature, pregnancy has followed apparently complete removal of both appendages.

When this takes place it is necessary to assume that not only a piece of ovarian tissue was left behind, but also patent stumps of the tube. My own researches and those of Fränkel

and others have demonstrated the truth of this statement. For this reason, too, I remove both appendages as well as the uterus in inflammatory disease of the pelvic organs.

FISTULOUS TRACT REMAINING AFTER LAPARATOMY.

DR. EMIL RIES.—I wish to report a rather unique case. The patient, 32 years old, was operated on in Wisconsin seven years ago for a left-sided infection of the appendages. They were removed, but the patient was infected in the course of the operation. As a result she was sick for a long time with fever and suppuration of the abdominal wound. The worst symptoms finally disappeared, but there remained a little sinus which discharged a small quantity of pus. At the time of menstruation some blood was discharged through it. For the last year or so the patient suffered considerably from pain in the region of the right appendages. During the menstrual period the pain increased in severity, and for the last six weeks prior to the operation she was unable to attend to her household duties. When I examined her I found the sinus, but could not pass an instrument through it and into the uterus. The scar was very irregular, showing a great deal of keloid tissue. On bimanual examination I did not find the uterus adherent to the scar, as expected, but it was distant from the abdominal wall by at least two inches. The right appendages were thickened, enlarged, painful, and immovable. I therefore advised a second operation, in which I intended to remove the right appendages and the sinus. I operated two months ago and excised the old scar. Everything was adherent in the peritoneal cavity: the omentum to the abdominal wall, bowels, and uterus; the bowel to the uterus, right appendages, and left stump. I tried to detach the bowel, and succeeded to some extent, when I found some oozing. I passed a sponge down to the spot of oozing and brought it up covered with fecal matter. This evidently meant a rent in the rectum, which I finally discovered in the upper part of the rectum, extending almost entirely across the bowel. I put a sponge down and continued the operation, removing the right appendages. As this was exceedingly difficult, I expect I left a little bit of ovarian tissue. I then began to dissect off the sinus, which was embedded in the strongest mass of adhesions. I succeeded in dissecting it out, and found that the sinus was formed by the stump of the left tube, which is patent and leads into a duct which is not formed by pseudo-membranes or granulation tissue, but by a distinct membrane like that of the ureter. This duct runs directly into the skin and out. This tissue has not been examined microscopically, but the probability is that it is a piece of the tubal stump which has been stretched by the adhesions until it finally assumed the appearance we have here. You can see the direct communication between the tubal stump and the duct running through the adhesions. The probability is that at the time of operation the uterus was left with its left tubal stump in close

proximity to the abdominal wall, became adherent, and as the uterus gradually sank down into its normal position the tube was stretched and became this thin-walled duct. I sutured the rectum, but did not remove the uterus, as I wanted to use it as a plaster for the rectum. The patient made an uninterrupted recovery, had a normal, spontaneous bowel movement on the fifth day, and is to-day free from pain and has no trouble of any kind.

DR. T. J. WATKINS.—I would ask Dr. Ries if he considers the case evidence in favor of the theory that menstruation comes from the Fallopian tubes. The statement has been made that the abdomen, when opened during the menstrual period, contains some free blood in the peritoneal cavity. I have never seen this free blood or any evidence of hemorrhage from the Fallopian tubes into the peritoneal cavity, although I have frequently operated during the menstrual period. Dr. Ries remarked that he removes the uterus when he removes both tubes. The fact that menstruation continued, in the case he reported, would induce me to arrive at an entirely different conclusion from his as to the removal of the uterus. I believe the case would be evidence in favor of not removing the uterus when both tubes have to be excised, especially as a small piece of ovarian tissue may, in the worst cases, usually be left behind to prevent the occurrence of the artificial menopause. The function of menstruation is important in young women. To remove the uterus because of the danger of fibroids developing might incline one to remove the uterus whenever we operate.

DR. J. CLARENCE WEBSTER.—I think this specimen is another confirmation of statements previously made by Dr. Ries in reference to the patency of the tube after operation. Such a specimen as this emphasizes the importance of giving up the old fashioned method of treating the stump. With reference to the escape of blood, I do not think that we can conclude anything at all with reference to the normal tube in menstruation, because we have pathological conditions here. My experience has been similar to that of Dr. Watkins. I have purposely operated on cases during menstruation, but have failed to find a single instance in which there was any blood in the peritoneal cavity.

DR. EMIL RIES (closing the discussion).—I would like to say a few words concerning tubal menstruation. Some time ago I demonstrated a tube which was separated from the uterus at the uterine horn and was occluded at the other horn. This tube was filled with blood. This certainly might lead us to assume that there is such a thing as tubal menstruation. At the same time I demonstrated another case of tubal separation from the uterus at the uterine horn; but though the woman menstruated regularly and the tube was occluded at the abdominal end, it was filled with serum. The first tube had undergone torsion of its pedicle, which explains the hemorrhage. The second tube had not undergone torsion and

did not contain blood. These cases are probably the best evidence against the occurrence of tubal menstruation. I have never seen any blood escaping from the tube during menstruation. The cases that seemed to substantiate tubal menstruation are cases of occlusion of the vagina or uterus where blood accumulated not only in the uterus but also in the tube. It is extremely probable that the blood in these tubes is due to the reflux from the uterus, and not to a discharge from the tubal membrane.

As to removal of the uterus with the appendages, I am well aware that the pendulum is now swinging the other way. But I still fail to see of what use the menstrual function is to a woman when she is unable to bear children. Again, menstruation is apt to be irregular after removal of the tubes, and the uterus, which is of no use whatever except to bleed, may become the seat of neoplasm. All modern research on the ovarian function and its influence on the life of a mature woman has failed to reveal the use of menstruation. Ovulation, or ovarian secretion, must be kept strictly apart from menstruation, which may or may not coincide with the ovulation. If that uterus is only good for the purpose of menstruating, I fail to see the good in leaving it after having removed the appendages. Dr. Watkins said it might be well to remove every uterus for fear of neoplasm. As long as a uterus is able to perform a normal physiological function, that of housing a child, and as long as good and serviceable appendages are left, if only on one side, that uterus is not useless, and I would not sacrifice it for the purpose of preventing a fibroid or carcinoma. If, however, the appendages have been removed and the uterus is no longer serviceable for the purpose intended, then I remove it. We do the same thing elsewhere. If we do a laparotomy and find the appendix slightly thickened, possibly adherent to a pus tube, although the woman has never had any distinct symptoms of appendicitis, I think most of us would remove the appendix as well as the appendages. It does not increase operative difficulty and certainly prevents what might be a very serious trouble.

DR. T. J. WATKINS.—When I spoke of the great value of preserving the function of menstruation in young women I had principally in mind the mental effect produced. Many women consider themselves unsexed when they no longer menstruate. I believe, also, that the preservation of the menstrual function in young women tends to diminish the tendency to neurasthenia in the cases under consideration. There may also be some value in the menstrual discharge as an excretion.

DR. F. HENROTIN.—Not long ago I had a case of a young girl of 14 who had a torsion of the right Fallopian tube and occlusion of the tube at the further end. The tube was filled with blood, although there was no occlusion below. She had menstruated three or four times. The doctor speaking of the torsion of the tube makes me desire to have a little informa-

tion, because I have not looked up the literature on the subject, and he is quite an encyclopedia on these matters.

DR. A. McDIARMID.—Some years ago I removed the tubes and ovaries, using silk of rather large size. Later a suture escaped through a little sinus in the cicatrix. Although I had removed both ovaries, the patient menstruated regularly from the very first month and was much delighted. After the little sinus was formed she menstruated through that as well as by the normal route. I know that the menstruation had a very pleasant mental effect on this patient.

DR. EMIL RIES.—In rebuttal against Dr. Watkins as to the mental effect of removal of appendages, I think it is very much as with a railway spine. When a man or woman has a railroad accident they either develop a so-called railway spine or they do not. Some neurologists say that those patients who are predisposed to neurasthenia usually develop it. Surgeons usually insist on this point most strongly, that a development of these symptoms after railroad accidents is due more to the doctor's talk than to the accident. So, too, with the mental derangements after removal of the appendages. Whenever I remove appendages I tell the woman beforehand that I am going to remove whatever has to be removed. I do not permit my patients to have any say as to what I am to remove, as they know nothing about it. I am the judge. I have not had any trouble with patients after removal of the appendages. A woman who was neurasthenic before the operation would undoubtedly be just the same after the operation.

As to the possibility of the menstrual blood being an excretion, I am waiting for the proof.

In regard to Dr. Henrotin's questions concerning the torsion of the tube, Praeger reported some 24 cases in the *Archiv. für Gynäkologie* a year or two ago. A few cases have been reported in this country. The last report, by myself, appeared in the *American Gynecological Journal*. Torsion of the tube may take place either in the normal tube or tubal tumor. The torsion is favored by the existence of a tumor with a distinct pedicle. Torsion of normal tubes has been described in the Transactions of the Philadelphia Gynecological Society by Montgomery, of Philadelphia. It may occur in young individuals, leading to amputation of the tubes even before birth. Rokitsky mentions such cases. The amputation of the tube is probably to be explained in various ways. It may be due to adhesions formed during embryonic life. When a tube which has not formed a tumor becomes twisted off at one end, the ligamentary apparatus of that tube must have been abnormal. One of the first conditions is that the tubo-ovarian ligament or fimbria is lacking in development. As long as that is fully developed the tube is held firmly and can hardly undergo torsion. If that is absent, as it is in a considerable percentage of cases, torsion is possible. The percentage of absence is about eight per cent of cases.

DR. EMIL RIES presented

A CASE OF PREGNANCY IN THE RUDIMENTARY HORN.¹

DR. A. GOLDSPOHN.—While pleased to hear the author's exposition of this interesting case, I feel constrained to take exception to his version of the cause of the pain. He is disposed to ascribe the pain to the presence of blood as a foreign body in the peritoneal cavity. That looks like quite an assumption, as it is not at all certain that blood in the peritoneal cavity causes pain every time. Furthermore, he has this rent in the pregnant horn to account for. If the pain were due to the presence of blood, then it did not come until the rent was there. Such a rent certainly was not caused by an injury, but is the result of contraction, which he admits occurs in this pregnant horn. We cannot rationally assume that this rent occurred without the patient suffering some pain, and this pain, to me, seems to have been entirely due to the contraction which produced the rent.

DR. F. HENROTIN.—These cases are rare and interesting. I have had one pregnancy in a true bicornate uterus and delivered the woman of a living child at eight and one-half months. There is something peculiar about the pain. The pain due to contraction of the uterus is rhythmical, which the doctor did not mention in his case. The fact is striking that he could not palpate without pain. In all cases of intra-abdominal hemorrhage with pregnancy there is excessive hyperesthesia with pain on pressure; it is characteristic of blood in the abdomen. Many times when we have cases of obscure, sudden trouble in the abdomen, where we expect from the history that there may be an extrauterine rupture or pregnancy, the peculiar character of the pain will oftentimes give us a clue. I think the pain in the doctor's case was caused by the presence of blood in the abdomen rather than by the rent in the tube.

DR. J. CLARENCE WEBSTER.—I have seen three cases of death follow tubal pregnancy in the last two years. The first was a girl who was treated by a physician for hysteria with flatulency. The autopsy showed the abdomen full of blood and a ruptured tubal pregnancy. The second case was treated for peritonitis and died. On postmortem a ruptured tube with blood was found. The third case was a similar one, and there was a condition exactly similar to the one Dr. Ries described. The woman travelled over a thousand miles and arrived at the hospital in a bad state. A few hours after her arrival there was evidence of intraperitoneal hemorrhage. An abdominal incision was made and a ruptured vein found in the tube wall, from which the blood was pouring out. There was no deep tear in the wall or any connection with the placental site.

With reference to the relationship of hemorrhage in a normal tube, I will cite a case under my care a few months ago. There was a complete occlusion of the tube one-half inch from the uterus, not due to torsion, but to a constricting band.

¹ See original article, p. 54.

The outer part of the tube was absolutely normal, and it contained no blood. While we do not believe that in the normal tube menstruation occurs, I think we must surely agree that it may occasionally occur. Looking at the uterus and tubes from a developmental point of view, it is not unreasonable to expect that a sharp distinction may not always exist between that part of the Müllerian tract which forms the tube and that forming the uterus. The uterine end of the tube may, therefore, occasionally be found to possess a mucosa which undergoes changes in menstruation similar to those found in the uterus.

DR. CHARLES E. PADDOCK.—During the past year I have seen three cases of mastitis following the injection of salt solution into the mammary gland. There are always present micro-organisms in the lactiferous ducts, and when these ducts become engorged by milk we have a lessened resistance of the epithelium lining the ducts, and inflammation follows. The result is the same when the saline is injected into these glands.

DR. RIES (closing the discussion).—I, of course, think it very likely that the woman had contractions of the rudimentary horn, or she would not have the rent; also, that the uterus would hardly be distended without contracting, but these contractions occur at intervals and are rhythmic. My patient had constant pain, and not only at the site of the uterus. I have seen this pain in cases to which Dr. Henrotin refers, where there was no pregnancy, and it reminded me of hemorrhage from some other cause. However, I am glad to learn about this.

The suggestion of Dr. Paddock as to the danger of salt solution injections in pregnant women I think is important. In the case under discussion, however, it was the palpable defect in the technique, an evident mistake of the assistant, and pregnancy had nothing to do with it. If you inject solutions into a man and use faulty technique you can produce gangrene just as in my case.

DR. PALMER FINDLEY read a paper on
ARTERIOSCLEROSIS OF THE UTERUS, WITH REPORT OF A
CASE OF SO-CALLED "APOPLEXIA UTERI."¹

DR. J. CLARENCE WEBSTER.—Although this is a very interesting paper, I do not think that it is one which we can very well discuss, though I feel certain that we can all criticise it. It appears to me that the conclusions of several workers to whom he has referred must be regarded as extremely hasty and ill-considered. We all know of cases in which we are unable to find any pathological lesion and which we term idiopathic menorrhagia or metrorrhagia, which simply means that we know nothing about it. I cannot understand why such occurrences should be attributed to sclerosis of the uterine

¹ See original article, p. 80.

arteries. Such a sclerosis is one of the commonest things to find in the uterus. It is a perfectly normal occurrence during pregnancy, the puerperium, and during the climacteric period. We have sclerosis of the vessels unaccompanied by any hemorrhage in many cases. If sclerosis were such an important factor, we would surely expect to find an enormous number of cases not amenable to ordinary treatment. I think that there is a very important line of investigation to be carried out in reference to uterine hemorrhages attributed to endometritis. Unfortunately, we rarely ever have the opportunity of obtaining the whole uterus. The statement is often made that uterine hemorrhages are frequently met with in malaria. What of it? Malarial women are certainly subject to the same ills as non-malarial women, but it would be extremely difficult to relate uterine hemorrhage in the former to changes in the arteries. Syphilis is an important cause of arterial sclerosis, but we see very many affected women who are no more liable to marked uterine hemorrhages than non-syphilitic women. So, too, with Bright's disease and heart disease. It is frequently stated that in these chronic lesions women are apt to have menorrhagia and metrorrhagia. Yet recent workers have investigated a large number of chronic heart lesions in which no particular prominence could be given to hemorrhage from the uterus. We are constantly making lax statements with reference to these general conditions. We undoubtedly find changes affecting the veins as well as the arteries, and I would be more inclined to believe that obstructive changes in the veins might account for hemorrhages in the uterine mucosa than obstructive changes in the arteries. We are not justified in making statements that obstruction of the arteries is the cause of hemorrhage in the uterus, because we have no end-arteries there as in the brain and lungs. We cannot associate with ligaturing of the vessels any particular tendency to hemorrhages. I remember one case where there was no mucosal hemorrhage after ligating both uterine arteries and one ovarian. The collateral circulation was undoubtedly established immediately.

I think Dr. Findley's criticisms in the latter part of his paper were valuable, but I wish he would be a little more sceptical and not give so much prominence to sclerosis of the arteries as some authors have done.

DR. RIES.—I brought down two specimens which might be a further contribution to this question, because they refer to two conditions which the doctor did not mention. One of them is from a case of *ichthyosis uteri*, a condition where the epithelium of the cavity of the uterus is stratified instead of being columnar. This case gave clinical symptoms of general arteriosclerosis, and was operated on for hemorrhages which could not be stopped. The patient was a lady of about 55 years of age. She had had no menstrual discharge for several years, when she began to suffer from hemorrhages. Carcinoma of the uterus was at once thought of, and I exam-

ined uterine scrapings. I found a condition of ichthyosis. As one curettement sometimes suffices to produce a cure, I advised the patient to wait for some time. After a time the hemorrhages returned, and, as she was not strong enough to waste any blood, I advised hysterectomy, the uterus being very small and freely movable. She consented, and I removed the uterus. It was striking to see the big, hard arteries. On microscopical examination I found arteriosclerosis in the blood vessels of the walls of the uterus. Generally speaking, we know nothing about the origin of ichthyosis. We know that it occurs in old women, sometimes in young women, and that it is frequently seen associated with chronic inflammatory conditions. It is a question in my mind whether the arteriosclerosis has anything to do with the ichthyosis, or whether they are simply accidental associations.

The other case which I have here is from a specimen I owe to Dr. Watkins. Several years ago he gave me a tube which had been removed for inflammatory disease. On examining the tube in cross-sections I found something which looked like a Pacinian corpuscle. I continued my search and found, not a Pacinian corpuscle, but something which has not been described before in the tube—an arteriosclerosis nodosa. I followed up such a nodule on a series of sections and found it to be about the size of a millet seed. I found arteriosclerosis, but not of the nodular character, in other parts of the specimens.

As to arteriosclerosis in general, I may be permitted to say a few words, because I have been interested in the vascular changes in the uterus during the normal and pathological puerperium. Eleven years ago I wrote a paper on changes of the uterus in normal involution after childbirth. I described the changes in the blood vessels which are exactly like these arteriosclerotic changes. Again, I have described this condition in pathological puerperal atrophy due to severe infection of the uterus, where you find arteriosclerosis associated with the development of much connective tissue, and with the muscular tissue strangled, compressed, and atrophied.

Dr. Findley suggests ergot as a possible remedy for hemorrhages due to this condition. I do not believe in ergot generally, but in a condition where the blood-vessel wall loses its contractility and where the muscular coat is atrophied I should certainly expect even less success from the use of ergot than in the normal condition.

DR. C. S. BACON.—In reference to Dr. Webster's statement that he cannot understand why menorrhagia should be attributed to sclerosis of the uterine arteries, I would refer to the explanation suggested by Reinecke. Ordinarily the arteries of the uterus, like all other blood vessels, are in a state of normal tonus and respond to the stimulus furnished by an unusual distension. Thus they react at the menstrual congestion, and in this way prevent an over-distension and finally eliminate the congestion. When the vessels are sclerotic—

i.e., when the walls are thickened—this reaction is not present and the over-distension therefore continues. Thus, on account of the sclerosis, the hemorrhage, which is a result of the over-congestion, occurs. Whether this theory of Reinecke really explains the condition or not, it seems theoretically not unreasonable, and, in the absence of other satisfactory explanations, it should be taken into consideration.

The cases collected by Dr. Findley are capable, it seems to me, of subdivision into two classes. Those reported by Von Kahlden, for example, are cases of atheroma, a senile change. Those reported by Reinecke, occurring at the menopause, are due to hypertrophic or hyperplastic changes in the vessel walls, perhaps resulting from infective processes. These latter cases are the ones that result from disturbances in the puerperium. Certainly, from a clinical standpoint, the importance of such a classification is great.

DR. FINDLEY (closing the discussion).—From Dr. Webster's remarks I infer that he is not inclined to consider the sclerotic changes in the blood vessels causal factors in uterine hemorrhage, but is rather inclined to look beyond the uterus for the cause.

While it is true that the greater number of reported cases are mere pathological findings or meagre clinical memoranda, yet enough has been presented to justify the inference that arteriosclerosis and calcification of the uterine walls do play an important rôle in the bringing about of uterine hemorrhage. I agree with Dr. Webster that the authors cited in the paper have fallen short of deducing a satisfactory explanation of these hemorrhages. They have not, in my judgment, sufficiently emphasized the influence of pelvic congestion brought about by obstruction to the general circulation. This is true of Von Kahlden's report of eight cases. He does not clearly emphasize the influence of such diseases as pneumonia, emphysema of the lungs, and heart lesions upon the circulation in the uterus. Probably in his eight cases, as well as in others reported, no hemorrhages would have occurred without the advent of such diseases as would impede the return circulation from the pelvis. And I believe it is equally true that without the arteriosclerosis and calcareous degeneration the hemorrhages would not have occurred even in the presence of pelvic congestion from the above-named causes. The two conditions undoubtedly co-operate in causing the hemorrhage. This is clearly shown in the case I have recorded. The arteries had been diseased months, and probably years, without causing hemorrhage, and not until the uterine arteries were plugged with thrombi did the hemorrhage occur.

I think Dr. Webster overlooked my statement that in addition to the arterial changes there was hyperplasia of the connective tissue and a corresponding atrophy of the muscle fibres; that this lesion is secondary to the arteriosclerosis, but may contribute to the obstruction to the circulation.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Stated Meeting, November 13, 1900.

The President, H. J. BOLDT, M.D., in the Chair.

DR. EDWIN B. CRAGIN presented

A FURTHER CONTRIBUTION TO THE STUDY OF FULL-TERM ECTOPIC GESTATION.

In May of this year I presented to the American Gynecological Society a paper on "The Treatment of Full-term Ectopic Gestation: Should not the Child receive more Consideration?" and in that paper reported three cases of this condition operated upon during the sixteen months ending in November, 1899. In one of these three cases the child was delivered alive; in the other two the children were dead at the time of operation.

This evening I have the pleasure of presenting another case in which mother and child are both living and the child shows no malformation.

Mrs. K. W., age 33, a German, was admitted to the Sloane Maternity Hospital October 16, 1900, with the following history: She had been married eight years and was always healthy. She had had one miscarriage at six months shortly after marriage, and another at four months two years ago. Her menstruation has been regular, of three days' duration, amount slight, and with little pain. There is no history of an endometritis or pelvic trouble of any kind. She had her last regular menstruation in January, 1900. In February she flowed for two weeks. In March she had a severe attack of abdominal pain which kept her in bed one week. After this she was well, except for alternating constipation and diarrhea throughout pregnancy. "Life" was felt in the latter part of June. She had had pains in the back for two weeks before admission, and for two days before admission she had had severe pains in the abdomen. She was brought to the hospital in an ambulance. On admission the patient had a pulse of 120. Abdominal examination was negative, on account of the tympanites and the rigidity of the abdominal muscles.

The vaginal examination showed the vertex low down in the posterior cul-de-sac, almost on the perineum. High up behind the symphysis the examining finger could just reach the posterior lip of the cervix, but could not enter the cervical canal. It was at first thought that the case was one of incarcerated retroflexed uterus with the posterior wall immensely attenuated. As delivery per vaginam seemed impossible, it was de-

terminated to open the abdomen and deliver from above. It was then found that the case was one of full-term ectopic gestation within the folds of the left broad ligament, pushing the uterus high up against the anterior abdominal wall and dissecting the peritoneum from the posterior surface of the uterus. As a result of the forty-eight hours of spurious labor the ectopic sac was found ruptured and the neighboring intestines covered with fresh fibrin stained with meconium. The point of rupture was rapidly dilated with the finger and the living child extracted. The placenta was chiefly attached to the left broad ligament, and it was found that the maternal vessels supplying the area could be ligated. The intestines were glued over the surface of the sac by recent peritonitis. The uterus was so incorporated with the sac that it was decided to remove the uterus, sac, and placenta *en masse*.

The patient was in poor condition when brought to the operating table, but with the help of a saline infusion she rallied well and has had a smooth convalescence. The abdominal sutures were removed on the ninth day, and union was primary. The baby was kept in an incubator for one week and then for one week in cotton. It is now four weeks old, and for the last two weeks has been out of cotton. At birth it weighed five pounds. It now weighs five pounds and seven ounces, a gain of seven ounces above its birth weight. The mother has been able to furnish from her breasts only a portion of its nourishment, the child receiving supplementary nursing.

In the paper presented to the American Gynecological Society my conclusions were as follows:

1. The viable ectopic fetus is worth saving.
2. Within the limitations outlined in the paper, attempts to save the child do not seriously increase the mortality or morbidity of the mother; hence,
3. In the treatment of full term ectopic gestation the child should receive more consideration than it at present enjoys.

My additional experience gained from the case presented this evening still further convinces me of the truth of the above conclusions. The recovery of the four mothers and the saving of the two children are certainly strong arguments in favor of the plan pursued.

While I believe that in the majority of cases the placenta will be so attached that it is safer not to remove it at the primary operation, occasionally, as in the case here presented, the attachment will be such that the maternal blood supply can be ligated and the placenta safely removed. Of course, when this is possible and primary union obtained, the gain is great.

DR. SIMON MARX.—I should like to ask Dr. Cragin if the symptoms lead one to believe that the case was primarily tubal or primarily abdominal pregnancy. I did not hear him state if there were conditions of collapse present indicating rupture.

DR. E. B. CRAGIN.—There were. The severe abdominal pain present kept the patient in bed for one week.

DR. SIMON MARX.—We are dealing with a very rare condition when we deal with a primary abdominal pregnancy.

DR. E. B. CRAGIN.—At the operation it was found to be between the folds of the broad ligament.

DR. H. J. BOLDT.—In connection with this case I am reminded of one that came under my observation in 1879 and which was reported by Dr. Pallen. In that instance the same diagnosis was first made as made by Dr. Cragin in his case. The correct diagnosis was not made until an abdominal section was done.

In regard to the question of Dr. Marx as to whether Dr. Cragin's case may have been that extremely rare condition, "primary abdominal pregnancy," I would say that I do not know of a single instance of unquestionable primary abdominal pregnancy. I saw one instance which I thought to be one without doubt, but even that case was found to be primarily a tubal gestation, as determined by the examination of Dr. W. H. Welde, of Johns Hopkins University.

DR. E. B. CRAGIN.—Speaking of the question of diagnosis, a satisfactory bimanual examination could not be made on account of the impossibility of reaching far enough forward and upward per vaginam to reach the cervical canal, and also on account of the rigidity and tympanitic distension of the abdomen. The uterus was carried far upward and against the abdominal wall.

DR. CHARLES JEWETT.—May I ask if the doctor had any trouble with hemorrhage; also, whether the liquor amnii was scanty and what was the placental attachment?

DR. MALCOLM MCLEAN.—I remember a case I reported eight or nine years ago to this Society upon which I operated, but after the death of the fetus. The gentleman who had charge of the case had expected a normal parturition, and he waited for parturition to occur in October, when the death of the child took place. I operated about the 1st of December. The child was implanted in the right tube, in the lower part of which was possibly a rupture. That was an interesting case, inasmuch as the child had gone on to full term and no rupture had occurred, except in the broad ligament where there was scar tissue. The placenta was implanted forward and had to be cut through, and the fetus was entirely within the tube.

DR. E. A. TUCKER.—The importance of an early diagnosis that the labor is spurious is very great. One is fortunate in saving the life of the child after two days of spurious labor, as death is apt to occur early. Seven or eight years ago I saw two cases of full-term abdominal pregnancy in which both children were lost, but in neither case was the spurious labor diagnosed early. One of these cases had been in spurious labor one week. She had had pains, vomiting, etc., all that time before it was recognized that the child was not in her uterus. The child was an enormous one, weighing ten pounds, and had been dead some time, dying probably early in the week. In the second case the child weighed seven pounds and was dead after three days of spurious labor. If the child is to

be saved, the diagnosis of spurious labor in cases of abdominal pregnancy must be made early, as the chances of a successful operation are best before the patient is exhausted.

DR. E. B. CRAGIN.—In answer to Dr. Jewett, I would state that the attachment of the placenta was to the upper portion of the broad ligament. The uterus, the sac, and the placenta were so incorporated that I thought it was best to remove them *en masse*.

In regard to the amount of liquor amnii, there was more here than in the other three cases operated upon. I could not tell how much, because the sac had ruptured as the result of the spurious labor.

In regard to the spurious labor, it had been going on for forty-eight hours, and rupture had occurred before she was put upon the table. I would not have saved the child had I not been there ready to operate. What seems to me the wisest conclusion, after operating upon this and the other three cases, and hearing the report of the case from New Jersey which died from internal hemorrhage as a result of rupture of the sac during spurious labor, is that the wisest time to operate in these cases is about two weeks before full term, so as to get ahead of the spurious labor; this offers the best chance of obtaining a live child.

DR. ABRAHAM BROTHERS presented

A CASE OF MALIGNANT CHORION EPITHELIOMA, OR
SO-CALLED DECIDUOMA MALIGNUM.¹

DR. H. J. BOLDT.—One important factor occurs in the history of the case reported by Dr. Brothers—namely, the first curetting was done by the family physician, but the scrapings were not examined at all. When she came into the hospital I did a dissection of the cervix and curetting. A tumor was also removed which was one-half as large as the tumor present in the specimen. Dr. Brooks reported that it was myxomatous tissue, with no evidence of malignant structure present. The sections were made serially so that nothing was overlooked. I was very particular that Dr. Brooks should look it over carefully for malignant degeneration, because from the history and the condition found I had suspected malignant deciduoma, and because I had such suspicion I wanted to make a digital exploration of the uterine cavity and therefore split the cervix. For a short time the woman did well, but then she began to bleed again.

DR. J. E. JANVRIN presented a specimen of

LARGE MULTILOCULAR FIBROMA OF THE UTERUS

which was removed by abdominal hysterectomy.

The patient, Mrs. E. M., age 45 years, married about fifteen years; she had one miscarriage at about the fifth month twelve years ago; no other pregnancy. She was regular as to dates of menstrual function and was in good health up to last

¹ See original article, p. 60.

June. About two and a half years since, she noticed enlargement in the right pelvic region, also that this enlargement increased in size and that the menstrual flow increased in amount on certain months, though fully one-half of the time it was normal. Her general health continued good.

Last June, while taking a long voyage by steamer, the menses, which was due that month, became excessive in amount and, from the history as I gather it from the patient, was accompanied by a sharp attack of peritonitis. I saw the patient on July 20 at her home in an adjoining city, and found a large multilocular fibromatous condition of the uterus, the apex extending upward to the right of the median line and fully three or four inches above the line of the umbilicus, crowding up against the lower border of the liver and under the false ribs. There were evidences of strong adhesions all through the pelvic cavity around the lower half of the mass, and no mobility of that part of the growth. The upper part was freely movable.

The patient's general health having been considerably impaired by the recent attack of peritonitis, I advised waiting a few days before removing the growth, and placed her upon general tonic treatment, together with the use of frequent hot vaginal douches.

On October 11, with the patient in very good condition, I removed this tumor. It was a difficult and long operation, lasting some two hours and a half, the principal difficulty being encountered in dealing with the adhesions. On the anterior surface of the growth the bladder had become attached probably early in the development of the case, and as the growth elongated upward the bladder was carried along, so that its fundus reached to a point only one inch below the umbilicus. In addition to this attachment of the posterior wall of the bladder to the anterior wall of the tumor, the anterior wall of the bladder was firmly adherent to the abdominal parietes, evidently a sequence of the attack of peritonitis in June. Notwithstanding the utmost care and deliberation in making the incision, I finally penetrated the anterior wall of the bladder; and this was caused by the fact that the parietal adhesions were so strong and spread out to either side so far that it was impossible to distinguish between the parietal and the bladder peritoneum. Of course, the adhesions prevented any escape of urine into the abdominal cavity. Passing a sound through the opening in the bladder wall, I found the fundus close up to the umbilicus. The cut in the bladder wall was immediately closed. I then extended the abdominal incision up to the left of the umbilicus and nearly to the sternum, and so obtained room enough to dissect the bladder away from the tumor. Thus far fully an hour's time had been taken. The upper half of the tumor, as it was brought out from the abdominal cavity, appeared to be a mass of fibromas extending upward from the fundus uteri. The lower half was composed of uterus and fibromas. In ligating the broad ligaments after getting below the ovarian vessels, it was difficult to so apply

the ligature as to prevent all hemorrhage from the uterus. This, however, was pretty effectually controlled by ligatures and the temporary use of the clamp forceps, and the uterus with the entire fibromas was dissected out from the lower segment of the capsule of the tumor, the arteries ligated seriatim, and the cervix uteri cut through, leaving about half an inch of the cervix to form a roof for the vagina. By this process of dissecting, or enucleation, the large ovarian arteries were not met with, they being enfolded, so to speak, within the capsular tissue. Sufficient peritoneal tissue had been secured from the posterior wall of the tumor to make, together with the capsular tissue, a thorough covering for the stumps, ligatures, and the cervix uteri, thus rendering the abdominal cavity free from any raw surfaces.

The shock of the operation was considerable, and to counteract it some two quarts of the warm normal saline solution were left in the abdominal cavity, after having flushed it out thoroughly, and a quart was injected into the rectum. Reaction came on gradually, and the patient has made a satisfactory recovery. The weight of the tumor when removed was eight pounds.

DR. J. E. JANVRIN also presented

A CANCER OF THE UTERUS COMPLICATED BY AN
OVARIAN TUMOR,

which was removed by abdominal hysterectomy.

Mrs. F. M., widow, age 59, had one child when about 25 years of age, and was badly lacerated at its birth. Five years ago I performed trachelorrhaphy and perineorrhaphy, and at that time there was no evidence of any malignant disease in the cervix. She has been in excellent health since the operation up to July last. At that time a sudden hemorrhage occurred. No attention was paid to this, but on its recurrence in September, when visiting in Philadelphia, she consulted a physician who curetted the cervix and advised against any radical operation.

On her return to the city the latter part of October I was consulted and found the cervix the seat of a cancerous infiltration. There was also a tumor occupying, as it seemed to me, the body of the uterus. This growth was so firm and hard that I diagnosed it to be a fibroma about the size of an infant's head. Although the cancer of the cervix had proliferated somewhat beyond the limits of the cervix to either side, and there was no probability of absolutely curing the case by a radical operation, I nevertheless advised abdominal hysterectomy, believing that the recurrence of hemorrhage and the offensive discharge would thus be obviated and a longer lease of life obtained than if nothing radical was done. The operation was done November 1. What appeared to have been a solid fibroid of the uterus was found to be a very tense and absolutely inelastic ovarian tumor originating in the left ovary and firmly bound down to the fundus uteri by old adhesions. The contents of the ovarian sac were evacuated and the sac

together with the uterus removed. The friability of the tissues around the cervix caused some difficulty in the ligation of the uterine arteries, but this was overcome by the use of a large number of catgut ligatures. The cavity was well filled with iodoform gauze packing extending down and out of the vagina.

A good portion of the cervix was removed from the specimen after the operation and submitted to a pathologist for examination. His report states that it is a case of rapidly developing epitheliomatous infiltration. "The growth is unusually diffuse, as sometimes occurs in those cases which rapidly infiltrate the tissue of the uterus."

It is not my usual custom to remove the uterus in cases in which I am well convinced that the cancerous infiltration has progressed into the parametrium. In this case there was some doubt as to the exact extent of the disease. And, furthermore, the existence of the tumor which was diagnosed as a fibroma of the uterine body was a decided incentive to an abdominal hysterectomy.

The patient has made a rapid recovery from the operation, but I expect a rapid proliferation of epitheliomatous elements into the pelvic tissues, especially into the bladder.

DR. ABRAM BROTHERS.—The case is very interesting, because I understood the doctor to state that the operation was preceded five years previous by a trachelorrhaphy. I believe the impression exists that trachelorrhaphy has an influence in preventing cancer.

DR. J. E. JANVRIN.—This case is the first one in my own experience in which a malignant disease has developed in the cervix uteri after trachelorrhaphy has been done. I operated upon this patient about five years ago and cut out the cervix thoroughly at that time. The sections cut out were examined thoroughly, and there was no evidence whatever of malignancy. For that reason it is an exceptional case, since the malignant condition developed four or five years after the trachelorrhaphy.

Dr. S. MARX read the paper of the evening, entitled

MY FAILURES AND SUCCESSES WITH SPINAL ANESTHESIA.

He had had in the neighborhood of one hundred punctures with two failures. Both occurred in intensely neurotic women. The more nervous a patient is, the more likely is the spinal anesthesia to fail. He then enumerated the possible causes of failure, as follows:

1. *Inert cocaine solution.* Repeated sterilization spoils the cocaine; it should not be boiled more than once, and the solutions should be freshly prepared for each patient.

2. *Too little of the drug used.* This is a factor that can never be gauged. In obstetrics between one-fourth and one-fifth of a grain is sufficient.

3. *An imperfect syringe.* With an imperfect syringe, back-

ing of the solution behind the sucker would cause the fluid to be ejected instead of injected.

4. *Idiosyncrasy.* This is a condition which can never be foretold. It is especially associated with highly nervous and hysterical patients.

5. *Faulty technique.* The largest number of failures are due to non-entrance into the canal, and are due to (a) faulty technique, or (b) too short needle, or (c) a very dull needle point which pushes the membranes before it, or (d) very large calibre needles which make inordinately large apertures and predispose to extravasation of the fluid, or (e) disturbing the relation of the needle point to the canal while screwing or fixing on the barrel.

He preferred the exaggerated inclined "scorching position." The patient's back from the coccyx to the middle of the dorsal vertebræ is rendered sterile. The solid hypodermatic syringe and its needle are boiled for ten minutes. The patient in position, the thumb of the left hand is placed on the spinous process of the fifth lumbar vertebra. The injection is given between the fourth and fifth spaces. Tait speaks highly of the sixth cervical space, but the reader of the paper objected to this space for the reason that the solid cord lies here, which may be damaged. To insure absence of pain from the puncture through the skin, a freezing mixture is used. The needle is inserted in front of and over the edge of the thumb, the direction being from above downward and without inward. If the point should strike the lamina, it is to be moved gently up and down until there is an absence of bony resistance. Then the point is pushed in slowly and gently in a slightly downward direction until a clear, limpid fluid runs out. Immediately the syringe is carefully screwed on, disturbing the needle as little as possible, and the cocaine is then injected. From eight to fifteen minims of a two per cent solution are used, representing between one-sixth and one-fourth of a grain of the salt. The needle is held *in situ* for a minute to plug the arachnoid puncture and insure the impossibility of the escape of the injected fluid; then the puncture is sealed.

From two to thirty minutes' anesthesia is ushered in, occasionally preceded by a marked hyperesthesia. There is often trembling of the limbs and a feeling of formication over the affected area. Vomiting is often present, but is very evanescent. Operations can usually be commenced as soon as firm pulling upon the labia elicits no pain. His clinical experience has taught him that the area of anesthesia varies considerably and cannot be influenced either by the dose given or the force with which it is injected. He had always held that it depended upon the rapidity of absorption or the susceptibility of the patient, but Tait and Caglieri taught him differently. They studied the mode of diffusion of the cerebro-spinal fluid by using insoluble colored mixtures, thus enabling them to note both the macroscopical and microscopical results. From their experiments they deduced that the extent and rapidity of

diffusion are influenced by the amount, composition, density of the liquid, but principally by the pressure under which the cocaine is injected. They agreed with him in his statements that the postoperative symptoms were due to a disturbance, in part, of the equilibrium in the subarachnoid space, and could be avoided by the preliminary extraction of a small amount of fluid and by making the injection slowly.

Tait and Cagliari conclude (in part) as follows: (1) To the lumbar route they propose to add the "low cervical" in the sixth cervical space, both easy and safe. (2) Direct intramedullary medication is feasible and deserving of further trial. (3) Subarachnoid injections are devoid of danger if made with certain precautions. The solution should be freshly prepared and injected slowly at a temperature of 37° C. and never in greater amount than 3 cubic centimetres. (4) The extent and duration of the analgesia thus induced are generally in direct proportion to the amount of the drug injected. Analgesia is noted in some cases as early as five minutes after the injection, and in others, for unknown reasons, as late as thirty-five minutes. Its duration is sufficient for the performance of all operations on the lower limbs and pelvis, and may be of service in obstetrics. (5) The disagreeable effects sometimes noted are partly due to the increase of pressure in the subarachnoid space, to too rapid diffusion toward the brain, and principally to the amount of cocaine used. These postoperative symptoms are never alarming or lasting. They recall the intradermatic effects of cocaine, and never resemble in severity the symptoms so frequently observed during or after chloroform or ether anesthesia. (6) One cubic centimetre of a one per cent solution of cocaine, injected slowly, is generally sufficient for all practical purposes and has not been followed by untoward results. (7) For obvious reasons it is a good plan to withdraw a small amount of cerebro-spinal fluid prior to making the injection.

6. *Noise, bustle, and excitement.* A last and very potent factor in making an otherwise good narcosis a failure is noise, bustle, and excitement during the operation. He obtunds their otherwise markedly increased powers of sight and hearing, preferably by plugging the ears and blindfolding the eyes. For the postoperative symptoms bromides are given in large doses, thirty to forty grains one or two hours before the operation. These patients should be operated upon, if possible, when their stomachs are empty. When the postoperative symptoms are persistent and no good results are obtained from the bromides, he considers that powerful cerebral sedative, hyoscine hydrobromate, in doses of one-two-hundredths of a grain, of considerable value. When cyanosis or dyspnea becomes apparent, nitroglycerin is used, but as yet he had never had occasion to use it in labor.

As to his labors, they were forty in number. Motor disturbances of the uterus he had never seen, for the uterine contractions go on regularly and rhythmically, and the os dilates as

under normal conditions, and the patient has the indescribable sensation, but not of pain, that she is delivering herself as naturally as if the symptoms of pain were not masked. When the anesthesia was complete spontaneous bearing-down did not occur; when told to do so, the patients were capable of bringing their abdominal muscles into play as under normal conditions. Under spinal anesthesia all forms of obstetric operations, except symphyseotomy and Cesarean section, were undertaken. It was never necessary to finish any operation under a general anesthetic when commenced with medullary narcosis. Relaxation of the uterus was never encountered, nor spasm of a severe grade, nor was there a greater disposition to bleed than under ordinary conditions. He had never met with involuntary evacuations from the bowel or bladder. In analyzing the 42 cases 4 must be excluded: 1 because of inert cocaine, 3 because eucaine was employed. In all cases where cocaine was employed the happiest results were obtained. In but one case were any bad symptoms noted, and here by mistake one-sixth of a grain of morphine was administered with the cocaine. This patient developed all the symptoms of grave opium-poisoning and required pretty heroic treatment to bring her out of her soporose condition.

DR. ABRAM BROTHERS.—I think any one hits the nail on the head when he speaks, not of his successes, but of the complications and after-effects. For, after all, we are familiar with the results of the other forms of anesthesia, and the advantages of the new method are so circumscribed that it cannot replace them as yet; the field is limited, and probably, if we give the new method its proper place, it would be limited to such cases as read to-night, in which, for instance, it has been successful in removing the uterus without evidences of pain. These operations may be brilliant ones so far as the analgesic effect of the cocaine is concerned. My experience has been limited to two cases, in one of which involuntary evacuations occurred on the operating table, and for nine days following there was incontinence of feces. The field of operation might be infected from that source.

DR. W. T. GIBB.—I have had three cases of medullary anesthesia, two operated on for hernia, in both of which there were involuntary movements from the bowels on the table. After this there were no bad after-effects except headache. Another case had a testicle removed; the man was a large, strong subject and required a second cocaineization. He felt no pain except when the cord was tied. He had taken a general anesthesia for the removal of the other testicle two years ago, and he stated that he would rather have this variety of anesthesia administered. He was an intelligent man and was much interested in the operation.

DR. AUSTIN FLINT, JR.—I hesitate about reporting cases, because I am not yet prepared to. I have had my house surgeon use it in three cases, and I shall report them only in a general way. The result in the first instance was an excellent one. There was complete anesthesia and no complications.

The result in the other two cases was not satisfactory. The severe headache following was the worst feature.

DR. RALPH WALDO.—I have seen but one case. This patient recovered, but was in a very bad condition immediately following the operation. All that night it was thought that he would die from heart failure due to the cocaine. Respiration was very rapid. I should like to ask what are supposed to be the advantages of this method over the other methods of anesthesia.

DR. MALCOLM MCLEAN.—In reporting these cases, especially those that came from France, I am reminded of one report of an operation for the removal of a small fibroid from the mammary gland under this method of anesthesia. It seems to me that this is the way that some surgeons act when they take up a new thing. Three minims of a three per cent solution of cocaine in the tissue of the mammary gland makes the operation perfectly feasible and painless, and spinal medullary injection was unnecessary and dangerous.

This method of anesthesia suggests to me a method in vogue years ago, but not now generally known. It was discovered that sulphuric ether, when introduced into the rectum of the patient, operated much quicker than when given by breathing into the lungs. It carried the surgeons off their feet for two weeks, or maybe it was a month. When one or two patients were nearly blown up this method of anesthesia was forgotten. The gentleman who advocated it has been forgotten, I believe. It took hold of many surgeons quite seriously, and those of us who were in the hospitals at that time thought that the ordinary way of administering anesthesia by inhalations would be placed aside, at any rate. It is not comparable with the new method with cocaine. Dr. Marx and the other gentlemen have made scientific investigations of this matter. I believe that persons should be cool about this matter, and that we should limit its application until it reaches its proper place; it will have to be done by the best men, and reports made must be carefully made.

DR. H. J. BOLDT.—While experimenting in the fall of 1885 to determine the physiological effects of cocaine, I noticed that its effect upon dogs in regard to the fecal evacuations was very marked. The dogs had occasionally frequent bloody stools.

DR. SIMON MARX.—The position taken by Dr. McLean is an excellent one. In regard to the matter of deaths from this procedure, we must remember that we cannot go into a serous cavity without danger or risk.

We have never had involuntary stools or urine, and I cannot understand why they should have occurred in the cases reported. Dr. Kammerer has had 37 operations without, so far as I know, the occurrence of involuntary stools or urine. In regard to the intense headaches, hyoscine will cause their disappearance, as a rule.

I am enthusiastic in this field, and I shall continue further in it, and if I have any fatal cases I shall report them.

TRANSACTIONS OF THE WOMAN'S HOSPITAL SOCIETY.

Regular Meeting, November 27, 1900.

The President, JOHN ASPELL, M.D., in the Chair.

PAPILLOMATOUS CYSTS OF BOTH OVARIES, ONE INTRALIGAMEN- TIOUS; HYSTERECTOMY, IN A GIRL OF SIXTEEN.

DR. PAUL F. MUNDÉ.—I have here a specimen which I removed ten days ago from a girl 16 years of age, who stated that she had only noticed the rapid enlargement of her abdomen within the last three or four months. She has been in good health and has no cachexia. I found an elastic tumor which reached above the umbilicus. The uterus was pushed to the right. She had been examined before, and it was quite easy to make a vaginal examination, in spite of the fact that she was but 16 years of age. I made a diagnosis of ovarian cyst, possibly intraligamentous. I opened the abdomen and found a papillomatous cyst of the left ovary which was intraligamentous. I was obliged to remove it by enucleating it from the bottom of Douglas' pouch and from its attachment to the broad ligament, leaving a large raw surface. I then found that she had a free cyst of the right ovary, also papillomatous, about one-half the size of the other one. I also removed that one. Then the question arose as to what I should do with the uterus, whether to do a panhysterectomy or to stitch together the flaps of the broad ligament and save the uterus. There was no special object in saving the uterus, except that it enabled me to complete the operation more quickly. It was found that it was impossible to stitch these flaps together because the defect was too large; therefore the uterus was amputated, leaving the cervix in place. The case recovered promptly, the girl being up on the twelfth day.

The papilloma has been examined and has been reported to be a simple papilloma, not of malignant type. The case is of interest on account of the age of the patient—16 years. This, I think, will be found to be as early an age as papillomatous growths have been found. Certainly, a panhysterectomy is not an operation often required at that age. I do not think there will be a recurrence, because the report states that it is not carcinomatous.

PEDICULATED FIBROCYSTIC TUMOR OF UTERUS FROM A GIRL OF NINETEEN; TORSION OF UTERUS.

DR. PAUL F. MUNDÉ.—I have here another specimen, taken from a young girl of 19 years. It is a peculiar specimen,

chiefly on account of the age of the patient. The tumor was about the size of a six months' pregnancy and had developed within six months or so. I diagnosed it to be an ovarian tumor. Upon opening the abdomen I found, however, that it was a fibrocystic growth of the uterus, springing from the left horn by a broad pedicle about three inches in diameter. The cyst was black in color, evidently partly gangrenous, the uterus having been twisted upon its axis so that the tumor lay upon the right side. I amputated the tumor from its attachment to the left horn. Both ovaries and tubes were normal and were left *in situ*. The abdomen was closed without drainage, and the patient made an uninterrupted recovery. It is a very rare occurrence to find a fibrocystic uterus in so young a woman.

DOUBLE PYOSALPINX.

DR. PAUL F. MUNDÉ.—This is a case of typical double pyosalpinx. Both tubes and the normal ovaries were removed through an abdominal incision from a woman 43 years of age who had a lacerated cervix, which was also repaired. I do not know what caused the pyosalpinx in this instance. The pus oozed from the tubes when cut. The patient made an absolutely uneventful recovery.

MALIGNANT TUMORS OF BOTH OVARIES, ONE DISCHARGING INTO THE UTERINE CAVITY THROUGH THE DILATED TUBE.

DR. PAUL F. MUNDÉ.—This fourth specimen is of unusual interest both as regards the diagnosis and as regards some of the features of the case. A maiden lady, 47 years of age, came for treatment for a watery discharge which had existed for about six months and was so profuse as to soak a dozen napkins each day. It did not seem to affect her general health, except that she was anemic. It was the annoying discharge that brought her to me. I found no particular abdominal enlargement, but there was a congenital contraction of the upper portion of the vagina, making examination rather difficult. The uterus was pushed to the left, and apparently contained a fibroid on the left side. On the right side was a tumor the size of two fists, deep down in the pelvis, which I took to be a tumor of the ovary (ligamentous) or a ligamentous myoma. It was difficult to say whether or not it was solid or fluid. Upon opening the abdomen I found a ruptured ovarian tumor on the right side, and flocculent masses, evidently malignant, floating out of the incision; and also a small tumor of the right ovary which was evidently malignant. Macroscopically it was unquestionably carcinoma. That was removed first. On peeling loose the larger tumor I found that it sprang from the left ovary and was connected with the uterine cavity by a widely dilated tube, similar to the small intestine. Evidently the fluid came from this larger cyst. (My original diagnosis had been hydrosalpinx.) The malignant ovarian cyst discharged through into the uterine cavity, and therefore the

cyst never became of sufficient size to become discernible through the abdomen. I am under the impression that this condition is exceedingly rare. It was removed, and the patient made a good recovery. The microscopical report states that the tumors were both malignant, of the most violent type, and it is a question whether a permanent recovery will be achieved. The malignant disease will probably return. The rupture of the larger cyst had occurred subsequent to my first examination.

DR. W. GILL WYLIE.—These are all interesting specimens, especially the last one presented. I must say that the condition of drainage through the Fallopian tube into the uterus is rare. I have never seen one exactly like it.

The papillomatous tumor occurring in a young woman is interesting in that it points out one fact in abdominal surgery which probably is not so much practised to day as it was thirty years ago—the fact that we should wait until the tumor becomes larger before operating. For many years I made it a practice to remove pelvic tumors when they became as large as a full-sized orange. Small adventitious cysts come from imperfect ovulation, and when they do not reach this size they are not of sufficient importance to get rid of. This should be true of papillomatous tumors. When they are large and intact they can be removed with complete success; they usually do not return. Tumors the size of the one presented should be taken out. I should like to ask the doctor why he left the ovaries and uterus in the case of double pyosalpinx where he sewed up the cervix at the same time.

DR. PAUL F. MUNDÉ.—The ovaries were shrunken and the uterus was healthy, and therefore were left in. The uterus was curetted and the cervix sewn.

DR. W. GILL WYLIE.—The general practice is, I believe, to take them away; often, when they seem to be normal, at the time of entering the menopause they give trouble. Every woman over 40 years of age with such condition should have the uterus removed, unless there is some special reason why a portion of it should be left. Unless that is done, so many of them come back and become exceedingly troublesome cases. I recollect one case that carried her uterus twenty-seven years. This case was in the service of Dr. Thomas at the Woman's Hospital. The case turned up at a clinic held by me at Holyoke, Mass., and I recognized her. That woman had been suffering from her uterus all those years, and when she asked me if I would remove her uterus I said "Yes." I removed that uterus and she had great relief from it. She was extremely nervous, had hot flashes, was anemic, and the uterine canal was very painful and hyperesthetic.

DR. GEORGE TUCKER HARRISON.—She did not have any of these symptoms when the uterus was gone?

DR. W. GILL WYLIE.—The reflex symptoms, which were of marked character, were relieved by removal of the uterus.

DR. JOSEPH E. JANVRIN.—A good many years ago I re-

moved a large fibrocystic tumor from a lady who was probably about 35 years of age at that time. This tumor grew by a small pedicle from the fundus of the uterus. It was thought to be simply an ovarian tumor before operation, but it turned out to be a fibrocystic tumor attached by a small stem, which was dealt with as Dr. Mundé dealt with his case. The patient made a good recovery.

I can see no reason why a uterus which is presumably as healthy as it was in Dr. Mundé's case, even although there is a condition of chronic endometritis and a lacerated cervix, should be extirpated. I treat those cases by curetting and sewing up the lacerated cervix, unless I think there is some malignant trouble developing. In that case, of course, I would not hesitate to remove it.

DR. CLEMENT CLEVELAND.—Dr. Mundé's interesting case brings to my mind the fact that I have had several cases of papillomata of the ovaries in young women where the disease was removed without recurrence.

The point that I wished especially to refer to was in regard to the removal of the intraligamentous cysts when they are not large and low down in the pelvic cavity. I have removed a number by posterior section, and it is my belief it is an excellent method in dealing with such cases. I have found that they can be more easily and thoroughly enucleated in this way rather than from above, and then the overlapping broad ligament is easily drawn out and secured by forceps or ligated.

Then in regard to removal of diseased tubes and ovaries without removal of the uterus, the same question that occurred to Dr. Wylie occurred to me: Why, after removing the tubes and ovaries for pus disease, should the uterus be left? It has been my habit to remove the uterus in such instances, because it is a useless organ and because at the same time all danger of secondary sepsis is entirely eliminated. I have, however, a number of times left the uterus when I felt very certain that it, too, was not diseased, and this because it was the earnest wish of the patient that I should leave some portion of her pelvic organs. I have in a few instances removed merely the tube and ovary of one side, because the uterus itself seemed to be healthy and because the ovary and tube of the other side appeared to be so.

I always make use of the Skene electric clamp when I remove an ovary and tube for pus disease, because I have learned by experience with it that there is no danger of a secondary sepsis from the stump, provided the uterus itself is healthy and there is apparently no disease of the uterine portion of the Fallopian tube. I mean that portion of the tube which lies in the body of the uterus.

DR. BACHE MCE. EMMET.—In considering these intraligamentous cysts I hold that, if one can be sure of one's diagnosis, the best method is to open from below and drain. In Dr. Mundé's case this, however, would not have been sufficient, and he would have been obliged still to have recourse to the

operation from above in view of the nature of the growth, which called for complete enucleation, and this could not be effected from below.

Some years ago, in a study I made of such cases, which was, I think, among the first in this line, I advocated such method in preference to the suprapubic route, even to its adoption in most cases after laparotomy had revealed the exact nature of the case, in view of the immense size of the superimposed blood vessels and the difficulty, if not impossibility, of extirpating the sac, necessitating its fixation to the edges of the wound and a prolonged drainage.

I did not catch what Dr. Mundé said he did in that case after finishing with the uterus, whether he sewed up the broad ligament or left it open, although he stitched the peritoneum over the stump of the uterus.

DR. MUNDE.—I closed the wound completely.

DR. EMMET.—I ask this inasmuch as Dr. Mundé did not suggest thorough flushing of the abdominal cavity, so desirable to wash out all traces of the papillomatous growth which is so prone to fasten upon the peritoneum, and all the more so upon unprotected surfaces. I have in mind also the wonderful benefits of quantities of saline solution in preventing the adhesion of intestines to raw surfaces, as well as serving to diminish shock.

DR. PAUL F. MUNDE.—In reference to the non-removal of the uterus in the case of pyosalpinx, I did not leave it because I thought the patient would have any particular use for it, but for the reason that it was not diseased except for the presence of a chronic endometritis, and I saw no need in prolonging the operation and so adding to its dangers. I cannot make up my mind to remove a healthy uterus simply because its appendages are diseased. So far as the subsequent neurotic and reflex disturbances are concerned, which might be alleviated by the removal of the uterus, I know that I have done many double oöphorectomies, and I have seen but a very few cases that complained afterward of symptoms referable to the uterus. I should like to mention a case seen some years ago for reflex neuroses in which the ovaries were apparently normal when the abdomen was opened. The brother of the patient, a physician, insisted on their removal, saying that he would hold me responsible if I failed to do so and there was no improvement. I therefore removed them. The neurotic symptoms continued, as I expected. I refused further operation, and some time later another surgeon removed the uterus, and the woman subsequently went to an insane asylum and is there yet. That is my opinion about removing the uterus for neuroses and mental disease.

As for enucleating papillomatous cysts, while it is unquestionable that some of them can easily be reached by way of the vagina, still I make it a rule, when the cyst reaches high out of the pelvis, that it is better and safer to open from above than to take chances in opening the vaginal vault. In this

case I certainly would have felt chagrined had I operated from below and unknowingly left the other cyst. It has been my practice, when in doubt, to open from above rather than from below.

A CASE OF FIBROMYOMA OF DOUBTFUL ORIGIN.

DR. J. DOUGAL BISSELL.—The history of the case is as follows: The patient was a negress, unmarried, 28 years of age. Several years ago an abdominal section had been made, but it is not certain what was done. When she applied to me she complained of feeling uncomfortable over the pelvis, but complained of no pain. Her work was interfered with because of this uncomfortable feeling, for the relief of which she sought my advice. I examined her and found a large, hard mass on the right side; it was distinctly felt below the umbilicus. She stated that it had been growing for about one year. It was not at all painful, but the finger in the vagina revealed another mass in the left side which was very sensitive. I advised operation, and removed these two masses that I here present. The pathological report makes it a doubt as to their nature, and so I bring them here to-night for your opinion.

The history of the operation is briefly as follows: The omentum was found adherent to the abdominal wall; the intestines were attached to each other and to the tumors and uterus. After freeing the right side I found a large fibroid covered by the broad ligament, embedded in a mass of adhesions; over that the tube. This tumor was dissected out, as was also the mass on the left side. The masses were situated just where the ovaries would have been situated. The tube on the left side was filled with blood. The method of removal I used was that of crushing the pedicles.

The pathologist's report is as follows:

"*Fibromyoma*.—The (middle?) fibres are highly cellular; they resemble those of the ovary to some extent, but it is impossible to say with certainty that it is ovarian tissue. The tumors might have arisen from the broad ligaments."

There is certainly a doubt expressed in this report as to the origin of these tumors. If they are of ovarian origin it seems to me that it would be a most difficult matter, after the tissues have undergone such a complete fibromyomatous change, to discover by the microscope sufficient evidence to determine with positiveness their origin. Their situation, the previous history of the patient, and the fact that no other organs resembling ovaries were found, incline me to the opinion that they are possibly of ovarian origin.

DR. TULL.—If she had menstruated regularly up to the time of removal and then stopped menstruating, it would tend to prove that it was ovarian tissue.

DR. GEORGE TUCKER HARRISON.—That point of Dr. Tull is well taken. Now, as a matter of fact, the ovarian tissue does furnish fibromata. Here we cannot find the ovaries, and these masses occupy the seat of the ovaries, and it is a logical

conclusion to assume that these are of ovarian origin. We know that these myomata are generally multiple. As the case now stands, it is safe to assume that these tumors are of ovarian origin.

A PECULIAR OVARIAN CONDITION.

DR. JOSEPH E. JANVRIN.—I should like to report a case that I saw this summer which seemed interesting to me when considered in connection with the point frequently discussed during the past few years, *i. e.*, patients with appendicitis with ovarian or tubal disease. The patient was a young girl, less than 18 years of age, who had, last June, a severe attack of localized peritonitis in the region of the right ovary and the appendix. She got over that attack moderately well, and when I saw her in September, one week or ten days before I operated upon her, I found a very hard mass, about the size of the fist, filling the right pelvic cavity, the upper part of it, and extending up into the lower portion of the abdominal cavity itself. It was as hard as a rock and I could not move it. It was attached to the pelvic bone very tightly. There was practically no pain on examination—that is, the examination caused her no pain, although the patient had pain all the time. I told the medical gentlemen present that it might be one of several things—a pyosalpinx possibly, with an extensive exudate around it, an appendicitis resulting in the same condition, or the two combined. In operating I found pretty extensive adhesions, and it was difficult to get the mass out. I found an ovary, about the size of the fist, in which were two cavities. The walls were very tense. One cavity contained an ordinary limpid, almost white, fluid; the other cavity, of the same size, contained pus. I suppose there were about two ounces of fluid in each cavity—ovarian fluid in one, pus in the other. In addition, the appendix was elongated and in a state of chronic inflammation—catarrhal probably. The ovary and tube and then the appendix were removed, and the patient made a perfect recovery. Some years ago I had a case just like this one in the Skin and Cancer Hospital—it was almost a counterpart, with this exception: the ovary was diseased and contained an abscess, but had no ovarian fluid in a separate sac. The two conditions were perfectly similar in all other respects. This patient also recovered. The first case is particularly interesting because of the presence of two different cavities in the ovary, one containing ovarian fluid, the other pus.

DR. BACHE M^CE. EMMET.—I should like to ask Dr. Janvrin if he is positive that it was pus in the ovarian tissue, or if it was not shut in by adhesions. It is more difficult to imagine a focus of pus in the ovarian structure than it is to suppose an infected point caused by the appendix or a pyosalpinx lying over this organ.

DR. JOSEPH E. JANVRIN.—The specimen has been examined by a fair pathologist, and he confirmed the solution given. I believe this originated as a pyosalpinx; that the ovary was

diseased at the same time by cystic degeneration, and that, in the process of extension of the disease through the tube, that section of the ovary nearest to the tube became infected. I do not think it is an extravasation simply, as Dr. Emmet suggested. I believe it was in the ovarian tissue.

DR. CLEMENT CLEVELAND.—I think in such cases, in making a diagnosis, we should always keep in mind the possibility of the complication of appendicitis. We know that the appendix may be found almost anywhere in the abdominal cavity. I have had several cases of pyosalpinx complicated with appendicitis. In one case the appendix was found badly diseased and attached to a pyosalpinx of the left side. In this instance I removed the uterus, tubes and ovaries on both sides, and the appendix, without separating them from their attachment to each other. The appendix, which was a very large one and distended with pus, was the last removed from its attachment to the cecum. There was a goodly quantity of pus in both tubes.

In a case of vaginal hysterectomy, after the uterus was removed, an appendix four inches long presented through the opening. This was removed with difficulty.

I think that disease of the right tube is often complicated by an adherent diseased appendix. I have myself met it a number of times.

DR. PAUL F. MUNDÉ.—Dr. Cleveland refers to a case where he removed an appendix four inches in length through a posterior vaginal incision. I removed one in a case where I made a posterior vaginal section for a pelvic hematocoele from ruptured extrauterine pregnancy. As soon as I opened the posterior vaginal vault the appendix rolled out and I removed it; it measured *seven* inches in length.

DR. JAMES N. WEST presented a paper on

THE ELEMENT OF TIME IN OPERATING.¹

DR. GEORGE TUCKER HARRISON.—This is one of the papers that almost exclude discussion. I concur in every word the reader of the paper has uttered. I agree with him that it is important to impress upon modern surgeons the element of time, and he has, no doubt, paid attention to the maxim of the old Romans, which was, as you know, "*Cito, tuto et jucunde*"—quickly, safely, pleasantly. I think with Dr. West that it might be advantageous to place "safely" first; operate with safety first, then quickly. Insist upon it that the arteries are well secured. Some surgeons are anxious to perform brilliant operations and get through their work in a certain time; they do not operate according to these principles of safety first and celerity afterward. Now the tendency is the other way. I recollect the first clinic that I ever attended when Prof. Gross was operating. Some of the boys pulled out watches, when Dr. Gross said: "Put up watches; I do not operate against time."

¹ See original article, p. 44.

DR. PAUL F. MUNDE.—I agree with Dr. West perfectly, and was particularly interested in what he said in reference to shock. I have heard it said that shock is *always* produced by loss of blood; that certainly is not so. One of the worst cases of shock that I have encountered was one that occurred four or five days after an abdominal section, immediately after the bowels had been moved by three grains of calomel and two drachms of Rochelle salt, and where I am sure the shock would have proved fatal if an intravenous infusion of saline solution had not been made. I have never forgotten that case of shock, and it was not due to any loss of blood. The patient was a very nervous, anemic woman. I do not think shock is produced by a prolonged operation; we all of us operate for one or two hours on complicated cases, often with a considerable loss of blood, and no shock follows. The shock that I have seen has been due to undue manipulation of the abdominal organs together with prolonged anesthesia. That is where we get shock, and often in particularly short operations where we have unusually sensitive abdominal viscera. Another point in the question of shock which comes under the title of the paper is one which I have observed when changing from a vaginal operation to a rectal operation, when dilating the sphincters, or when operating upon a complete laceration of the perineum; so soon as I invade the rectum the pulse and respiration drop and the anesthetist says: "She is having rectal respiration now, doctor." One year ago I had a case where I endeavored to repair a laceration of the cervix and a complete laceration of the perineum. The patient was taking the ether badly, and when I started in to do the rectal operation she went into shock and died then and there. The anesthetist said that as soon as I touched the rectum he noticed the pulse and respiration flag, and stopped the anesthetic. Fourteen years ago, when travelling through Europe, I stopped at Berne and witnessed Prof. Müller do an operation for the removal of the ovaries; it was not a difficult operation. He opened the abdomen and took out the ovaries and tubes. He asked me, as an old friend, to take the pulse of the patient and to watch it and see if, when he tightened the ligature around the ovarian pedicle, there was any disturbance in the pulse. It was the first time my attention was called to this point. I distinctly noticed that the pulse of the patient flagged and dropped momentarily. All this shows the influence of certain nerves in producing shock. I can readily understand why handling or pressing with clamps certain nerve filaments and trunks, as must occur when clamping adhesions or the pedicle, may produce a certain amount of shock. It is not so much a question of time, but the avoidance of some of the incidents which a prolonged operation brings about, that prevents shock.

DR. W. GILL WYLIE.—I fully agree with the thoughts expressed by the reader of the paper. The paper cannot be criticised because it is so well written and so well said, and some

very important facts brought out. Still, I do not think I can agree altogether with the late speaker, especially when he says that shock is not caused by hemorrhage.

DR. MUNDÉ.—I did not say that. Eminent surgeons have stated that shock was chiefly due to hemorrhage. I said that that was not literally true.

DR. WYLIE.—In the large majority of cases in which I have been consulted for shock and patients have died, the shock was occasioned by hemorrhage. Hemorrhage is the primary and chief cause of shock and is the one to be avoided. I think other causes of shock are generally associated with an enfeebled condition of important organs—for instance, the heart. As a rule, patients do die from the shock of hemorrhage, unless it is counteracted. To-day, if we counteract the effects of loss of blood during the time of operating and not after the operation, we can readily prevent the bad effects of hemorrhage. Patients who are expected to lose a large quantity of blood should have shock prevented by filling the vessels previous to the operation. Careful operators may operate many years and not lose a single case from shock. The cases that we must lose from shock must be highly septic, and fresh septic material must be introduced, and they die very quickly. In these cases we have not the time to empty the intestines and get rid of their contents.

I agree with the writer of the paper that many operators are thought to be slow. There was a time when bad results came from slow operating. To-day it is very important that we should be careful, slow, and not brilliant—the time for that is past. Surgery is too much of an art for that kind of thing.

I still believe that in the case of Dr. Mundé's, where he refers to shock having followed the moving of the bowels, etc., that it was due to an internal hemorrhage. In many of these cases, some hours after the operation, there may be a slight hemorrhage which will kill the patient. It has also been noticed that many of these cases that are exceedingly bloodless and anemic will stand loss of blood from operations better than those who have not lost blood before; they seem to acquire the power of resistance.

DR. MUNDÉ.—I can assure Dr. Wylie that there was no hemorrhage, internal or external, in the case of shock which I related. I saw the case; he did not.

DR. LE ROY BROWN.—I wish to emphasize a point brought up by Dr. West and one that is well recognized, which is, that a large portion of shock in abdominal surgery is due to the handling and exposure of the bowels. I believe that every operator should avoid that, and I think that one of the best ways to avoid it is to thoroughly keep the bowels covered—that is, to prevent them becoming exposed by covering them—and also to prevent undue handling of them. It has been my custom at the commencement of an operation to cover the intestines so that they are not exposed at all. In working in the pelvic cavity, by properly covering them they will not become

exposed except where a knuckle escapes. If we endeavor to do this I think the element of shock is largely reduced; it certainly is reduced to a minimum.

DR. BISSELL.—In regard to the protection of the intestines, I have found it advantageous to use the omentum for this purpose. It may not always be found sufficiently large to completely cover the intestines; though small, it will materially aid in protecting them. The gauze pads used over the omentum and intestines should be previously moistened with salt solution, so as to prevent irritation of the delicate peritoneal covering which dry gauze will occasion.

DR. BACHE MCE. EMMET.—In this connection I wish again to refer to the flushing of the abdominal cavity in cases in which the intestines may be exposed to the air or infective material. Handling in itself may not prove specially harmful, for all of us have had occasion to draw out successive lengths for one purpose or another without producing shock; in fact, no more harm comes to the intestines from rolling over tumors or being occupied by hardened feces; but dragging upon the intestinal attachment, the mesentery with its plexus of sympathetic nerves, will positively produce shock. This flushing with saline solution is certainly better to protect the intestines, if one can float them in the upper part of the abdominal cavity, than endeavoring to cover them by pads of gauze.

DR. CLEMENT CLEVELAND.—I merely wish to say I consider Dr. West's paper an exceedingly interesting one, both in itself and its theme. I think he has honored himself and the Society in its writing. The question of shock is one of the greatest interest to me. There are several elements in operating that have been greatly improved upon during the past few years, by which the occurrence of shock has been so much lessened that we now very rarely meet with it. One of these is the vast improvement in anesthetization. With the use of nitrous oxide gas and ether in succession, the patient is completely anesthetized in three or four minutes, instead of twenty minutes to a half-hour as formerly.

Again, the Trendelenburg posture cannot be too strenuously insisted upon as a most important factor in the prevention of shock. It carries the intestines to the diaphragm and away from the field of operation. The intestines should be completely covered, as Dr. Broun has said, with gauze pads, and it is preferably better to wet these pads to prevent their adhering to the intestines.

Then I consider filling the abdomen half-full with normal saline solution to be almost a necessity as a preventive to shock. In a healthy condition the peritoneum, which is really one immense lymphatic sac, will absorb rapidly a large quantity of saline solution. So important is this that most operators to-day rarely fail to use it toward the end of abdominal operations.

DR. WEST.—I wish to thank the gentlemen for their discussion of my paper. I wish to say that we all realize the enor-

mous advantage of taking the time necessary to do our work thoroughly and skilfully, which the use of anesthetics permits, but the point upon which I insist is that we should cultivate the habit of doing it in the least possible time in which it can be done. In regard to the question of shock, I believe that those who think it is due to hemorrhage are getting the cart before the horse. I have seen cases of railroad injury where the bones have been extensively comminuted, the tissues much lacerated, and yet with but slight hemorrhage; some of these patients died of shock. Dragging upon the intestines, pulling them and thereby making traction upon the mesentery, are elements in the production of shock to which I desired to call especial attention. Shock may be produced by impaired action of the vasomotor nerves, and the blood may empty itself into its own blood vessels. Blood vessels may become so dilated from loss of inhibition of vasomotor nerves that they are enabled to hold a large amount of blood. When a patient receives an injury which induces a loss of inhibition of the vasomotor system, there may be a condition induced which will produce the same effect as that of an actual hemorrhage, by the blood emptying itself into its own dilated vessels.

Official Transactions.

CLARENCE REGINALD HYDE,
Secretary.

TRANSACTIONS OF THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

PROCEEDINGS OF THE THIRTEENTH ANNUAL MEETING, HELD IN ATLANTA,
GEORGIA, NOVEMBER 13, 14, AND 15, 1900.¹

DR. F. W. McRAE, of Atlanta, Ga., followed with a paper
ON

APPENDICITIS IN THE FEMALE.

At the outset the author referred to an exhaustive article by Edebohls as to the relative frequency of appendicitis in the two sexes; also to the work of Einhorn, who had found in 18,000 successive autopsies perforating appendicitis in 55 per cent of males and 57 per cent of females. Robinson, in 128 autopsies, found evidences of past peritonitis in or about the appendix in 68 per cent of female and 56 per cent of male bodies. Clinically, Edebohls finds that 4 per cent of all women have appendicitis. On the contrary, Deaver believes that 80 per cent of all cases occur in males. Of 1,557 cases of appendicitis collected from the annual reports of the city hospitals of Berlin, 949 were males and 628 females.

¹ Continued from p. 878, December JOURNAL.

The essayist quoted these eminent authorities to show the divergence of opinion as to the relative frequency of the disease in the male and in the female. In practically all of the cases that had come under his own observation in the female, mistakes in diagnosis had been made either by himself or by the attending physician. Almost all of the attacks had occurred at or about the menstrual term, and most of them had been diagnosed "inflammation of the tube or ovary." In 2 cases of his own series the appendix and the right tube and ovary were involved; in 2 others the appendicular trouble was complicated with diseased kidneys; 2 patients suffered with recurrent appendicitis and attacks of renal colic before or after operation for the removal of their appendices. He had records of 49 cases of appendicitis seen within the last sixteen months, 29 of them being males and 20 females. During this period he had operated on 17 males and 14 females.

The author narrated 13 cases. Of this number Cases 8 and 13 were the most interesting, which we herewith epitomize:

CASE VIII.—Mrs. W. C. T. First operation October, 1899, for ruptured tubal pregnancy. Recovery with persistent fistula where drainage had been left. Second operation May 10. Fistulous track dissected out; cyst of the broad ligament removed, together with a chronically inflamed and very much enlarged appendix, surrounded by dense adhesions and adherent to broad-ligament cyst. The diagnosis at the time of the first operation was "acute appendicitis with abscess," and the recovery from the first operation was tedious. The patient, who was profoundly septic at the time of operation, recovered slowly, with characteristic septic temperature and pulse for several weeks. Whether appendicitis existed at this time or not he was unable to say. Recovery from the second operation was tedious, but uneventful and complete.

CASE XIII.—Miss B. C., age 21. Seen in consultation with Dr. Summerfield. There was a history, extending over a period of about two years, of indefinite abdominal pain involving the whole right side from the liver to the pelvis. No definite diagnosis was made, and an exploratory operation was advised. Operation September 7, 1899. The appendix was chronically inflamed, adhesions extending from the cecum to the liver upward and down into the pelvis, involving the right tube and ovary. The right ovary was as large as a lemon, and the tube thickened and distended. The appendix, tube, and ovary were removed. Patient made a tedious recovery, developing a left saphenous phlebitis about ten days after the operation.

These cases were reported to emphasize the difficulties attending diagnosis. In several of them systematic treatment directed to the genitalia had been carried on without giving any benefit whatever, while the removal of the appendix effected a cure. In others the ovaries and tubes had been removed, and still the symptoms persisted until relieved by appendectomy. The author is convinced that the great dis-

parity in the statistics as to the relative frequency of appendicitis in the male and female is due, in a great measure, to mistakes in diagnosis. It is much more difficult to make a diagnosis of appendicitis in the female than it is in the male. Sufficient stress, in his opinion, has not been laid upon the fact that appendicitis in women usually occurs at or about the menstrual period.

DR. J. B. S. HOLMES, of Atlanta, detailed three interesting cases of appendicitis in females which illustrated forcibly the necessity of always examining the appendix when the abdomen of a woman is opened for any cause.

DR. HAL C. WYMAN, of Detroit, cited a case of extrauterine pregnancy in which he removed a fetus that had apparently died at about the end of the seventh month of pregnancy. The operation was done thirteen months after the appearance of the first symptoms of pregnancy. The appendix was found intimately blended with the fimbriæ of the right tube. The left tube had also suffered some disease, so that he doubted its perviousness. It was not removed because there was no particular indication for its removal. The right Fallopian tube, however, was involved with the appendix by dense inflammatory adhesions, and it occurred to him that in consequence of that blending the impregnated ovum had escaped. With this experience we might justly charge some of the cases of extrauterine pregnancy possibly to adhesions between the fimbriæ and the appendix. The appendix was $3\frac{1}{4}$ inches long; it had a number of scars; it was much hardened at its end and at the point where union with the fimbria occurred.

DR. HOWARD A. KELLY stated that for four years past he had made it a rule at the Johns Hopkins Hospital to have stated on a slip the exact condition of the appendix. During this period he had removed 150 appendices. Of this number 60 were involved in pelvic inflammatory disease. He found the appendix adherent to myomata in 12; adherent to ovarian tumors in 9. He found carcinoma of the appendix secondary to ovarian carcinoma, without any traceable macroscopic relation, in one case, and primary carcinoma in one other case. He found tuberculosis of the appendix secondary to tuberculosis in the tubes and ovaries in 3 cases; in the remainder of the cases calculi, cystic disease, and uncomplicated appendicitis. If, in opening the abdomen for any pathological condition, the incision is sufficiently large, he would examine the appendix.

DR. LEWIS S. MCMURTRY mentioned a case in which he had enucleated an ovarian cyst in a woman of 30. She had had a typical acute perforative appendicitis, followed by septic symptoms, which was quite limited in the area of peritoneal involvement. When the abdomen was opened it was found that the appendix, instead of perforating the general peritoneal cavity, pierced the ovarian cyst, in that manner limiting the infection to the ovarian cyst and saving the life of the patient.

DR. WILLIAM P. NICHOLSON, of Atlanta, called attention to the coincidence of disease of the appendix and uterine adnexa.

and cited cases in which symptoms for years had been ascribed to uterine or ovarian troubles, but operation disclosed the fact that the appendix was solely at fault.

DR. GEORGE BEN JOHNSTON expressed the conviction that chronic appendicitis is quite as frequent in the female as in the male. He believes, however, we see fewer cases of the fulminating form of the disease in the female than in the male. He has observed numerous cases of chronic appendicitis associated with movable kidney in females, and it is sometimes difficult to determine which is the cause of distress for which the patient consults a surgeon, the diseased appendix or movable kidney, or both. The coexistence of the two conditions is so frequent in his practice that oftentimes he keeps patients under observation for days, perhaps weeks, to determine which is the more distressing condition.

DR. J. W. LONG, of Salisbury, North Carolina, contributed a paper on

DRAINAGE IN ABDOMINAL SURGERY.

The chief purposes for which drainage is employed are:

1. To drain away existing septic material.
2. To afford an exit for the sepsis when the operator fears he has possibly infected his patient.
3. To provoke adhesions and thereby wall off weak spots from the remainder of the abdominal contents.
4. To keep the peritoneal cavity free of blood and other fluid.
5. To allow of a more certain knowledge of the conditions present in the abdomen.
6. Gauze drains are sometimes employed as tampons to control hemorrhage.

These features of drainage were discussed in consecutive order.

After referring to the work of Wagner in 1877, and that of Muscatello in 1895, and others, regarding the histology and physiology of the peritoneum, the author passed on to the consideration of objections to drainage, and these were enumerated as follows:

1. Drainage is deceptive.
2. Cases not drained do better.
3. Drainage is neither scientific nor workmanlike.

The last statement was made with an apology and due deference to those distinguished gentlemen present who drain most of their cases.

In the discussion DR. MANNING SIMONS, of Charleston, South Carolina, agreed in the main with the observations of the essayist, but said there are some surgeons who would not admit that draining in suppurative cases is an evidence that something had been left which ought to have been removed, or that the surgeon had done something that he ought not to have done. He apprehended that there are many cases in

which suppuration is not confined to the tubes, but it has diffused itself more or less over the pelvic and abdominal cavities. The surgeon's conscience would scarcely, in such a case, prompt him to close all avenues for the escape of reaccumulated fluid from the cavity. Drainage is applicable to such cases.

DR. HOWARD A. KELLY believed that there is a tendency on the part of the profession to drain entirely too many cases. Of his first 100 cases, eleven years ago, he drained over 80 per cent of them. Of his last 100 cases, he drained in about 1 or 2 per cent of them. He would drain cases of localized sepsis where he could not remove the entire septic area.

DR. W. E. B. DAVIS, of Birmingham, Alabama, referred to drainage in general septic peritonitis, and said it was impossible to lay down any definite rule for it, because the results were uniformly fatal. Reports in the past showed the percentage of recoveries from general septic peritonitis to have been small. Much good can be accomplished by first using peroxide of hydrogen in the abdomen in this class of cases, following it with infusion of normal salt solution, injecting, say, a quart under the skin every three hours. This accomplishes even more than multiple drainage in cases of general septic peritonitis.

DR. BEVERLY MACMONAGLE, of San Francisco, called attention to drainage in connection with surgery of the gall bladder and gall ducts. When the gall bladder is opened it is absolutely essential to drain it. In all cases upon which he had operated on the gall bladder he had found it in such a condition that it was necessary to drain the gall bladder itself. In so doing it was almost impossible to drain it in such a way that a certain amount of fluid would not escape into the peritoneal cavity, hence the necessity of using a small drain of gauze in the peritoneal cavity itself.

DR. GEORGE H. NOBLE, of Atlanta, Georgia, described a flap operation for

ATRESIA OF THE VAGINA,

saying that he had operated successfully in several cases by the method which he demonstrated by illustrations and diagrams.

DR. GEORGE J. ENGELMANN, of Boston, read a paper on

THE AMERICAN GIRL OF TO-DAY.¹

DR. J. G. EARNEST, of Atlanta, said that fifteen years of country practice had taught him that there is a vast difference in menstruation in the country girl and the city girl. With the country girl pain during menstruation is hardly known. It is rare to have country girls complain of it during menstruation. The menstrual period comes unheralded to the country

¹ See article in December JOURNAL, p. 753.

woman, except by the appearance of the flow itself. On the other hand, in city girls and women, whose nervous systems have been developed at the expense of their muscular systems, menstruation is entirely different in that it is attended in some cases with great pain and nervous phenomena.

DR. J. WESLEY BOVÉE, of Washington, D. C., described an operation for the

TREATMENT OF MARKED PROLAPSE OF THE RECTUM IN WOMEN.

In this case marked prolapse of the uterus was associated with hemorrhoids and great procidentia of the rectum in a woman to whom the uterine appendages were of little value. No simple operation would have relieved the rectal condition while the uterus was in such a state of prolapse, and *vice versa*. These conditions caused him to resort to the radical procedure, which can be best described by narrating the following case:

Sister V., 35 years of age, had been treated unsuccessfully a number of years for prolapse of the rectum, uterus, and hemorrhoids. When she came under the care of the essayist she was suffering from large internal and external hemorrhoids and a protruding roll of fully three inches of the rectum that was thickened and much discolored. The uterus was of normal size, with its cervix just behind the pubes and the fundus very low posteriorly. A few days later, March 5, 1900, operation was done. The hemorrhoids were first removed, then the abdomen was opened by the usual subumbilical median line incision. The left ovary was about three times its natural size and largely consisted of numerous cysts. The appendages were removed and the uterus firmly fixed to the abdominal wall by four interrupted, strong catgut sutures that passed through a considerable portion of the uterine fundus at the top and the principal fascia of the abdominal wall on either side of the incision. The rectum was now drawn upward until it was fairly tense, and so held by an assistant until it was sutured to the cul-de-sac and posterior wall of the uterus up to the abdominal wall. This was done by a running catgut suture. It completely divided the retrouterine pelvic cavity into two equilateral ones.

DR. R. R. KIME, of Atlanta, read a paper entitled

SOME LIFE-SAVING MEASURES IN OBSTETRIC WORK.

Leaving out of discussion instrumental deliveries, Cesarean section, symphysectomy, etc., the author considered as the most important life-saving measures saline infusions, medicinal remedies, serum therapy, hydrotherapy, and drainage. Each of these measures was taken up and discussed consecutively.

In cases of placenta previa and postpartum hemorrhage, saline infusions or intravenous injections are of prime import-

ance, not only to save life, but to lessen susceptibility of infection and hasten recovery.

DR. JOHN G. EARNEST, of Atlanta, Ga., reported a case of

SOLID TUMOR OF THE OVARY.

The patient, Miss M., age 32, unmarried, was seen June 24, 1900. She was a very small woman with a narrow pelvis; had been gradually losing flesh for several months, until she had become greatly emaciated. For months the patient had fever every day. There was constant pain in the pelvis; she was very despondent, worn out, and exhausted. She had a constant watery diarrhea, which was occasionally interrupted by a few days' constipation accompanied by great abdominal distension. This condition, when occurring, was relieved with difficulty, requiring active purgatives and free use of enemas. Nausea was a distressing symptom. When the abdomen was opened a mass reaching above the umbilicus was observed. It stood out prominently in the median line, was symmetrical, smooth, and hard. It was so firmly fixed that it could not be moved. The dark line down the centre of the abdomen was unusually pronounced. Examination by the vagina was somewhat hampered by an unruptured hymen and tenderness due to the local peritonitis, but he found the cervix pointing forward, low down, and twice its normal size. The uterus was retroverted, firmly fixed, and apparently continuous with the superimposed tumor. Rectal examination disclosed that the uterus and tumor were seemingly parts of the same body. The fundus of the uterus could not be reached through the rectum. He believed it to be a uterine fibroid. Patient declined operation until she could go to her home and build up under the care of her family physician. This she did, returning August 1. On August 3 he opened the abdomen and evacuated a small amount of light-yellow ascitic fluid. The abdominal peritoneum was mottled with dirty brown. The tumor showed the pearly lustre of an ovarian tumor. It had so grown that it seemed to be caught under the promontory of the sacrum and was adherent to the pelvic wall. It was enucleated with some difficulty. The pedicle was from the right side and comparatively small. The tumor, when removed, was found to be ovoid in its general outline, with an indenture corresponding to the promontory of the sacrum. It measured 20 centimetres in length and about 14 in breadth at the widest point. When cut open its appearance was very much that of an ordinary uterine fibroid, and the tissue was quite dense. The cortex was united to the tumor by a thin layer of cellular tissue infiltrated with serum.

No microscopic examination was made. At first it was supposed to be a sarcoma, but careful examination showed the fibres to be distinct and arranged in irregular whorls, as in uterine fibroids, and the tissues quite as hard as any fibroid, and absolutely solid without a break.

The recovery was uninterrupted.

DR. W. D. HAGGARD, JR., of Nashville, Tenn., gave a verbal abstract of a paper on the

HISTOGENESIS OF OVARIAN DERMoids.

He stated that dermoid cystomata of the ovary differ essentially from dermoids in the orbit, pharynx, mediastinum, scrotum, coccyx, and elsewhere. The latter are unquestionably from inclusions or nipping off of the ectoderm in the development of the embryo, which is similar to the "healing in" of skin in wounds and the subsequent development of a dermoid growth. These structures all contain sebaceous material, hair, plates of bone, teeth, etc., and purely dermal derivatives. Ovarian dermoids contain derivatives of all the mesoderm and enteroderm as well, and hence some adequate explanation other than the inclusion of the skin-forming layer must be forthcoming.

All sorts of curious theories have been successfully advanced. The virginal-pregnancy idea was succeeded by one which ascribed the origin of these growths to prolonged ungratified sexual desire on the part of the woman. A man who jested at his wife during travail was afflicted with a pregnancy (dermoid) of the thigh. Dermoids of the ovary, however, are akin to the teratomata, and it is to the ovum itself that we must look for a solution of the vexed problem of their etiology. Wilms was the first to claim the ovulogenous origin of these growths. Some pathological activity on the part of the ovum in the Graafian follicle is responsible. Bland Sutton found a dermoid of the ovary in a horse, when the growth was undoubtedly in the ovum suspended in a large cystic Graafian follicle. Similar cases have been reported in women.

Kraemer has recently gone over the entire field and amassed an amazing amount of material that goes far to settle the question and prove that ovarian dermoids contain products of all the blastodermic tissues; that they cannot spring from an evolutionary inclusion simply, as dermoids elsewhere undoubtedly do; that they are of ovulogenous origin—a sort of parthenogenesis.

In evidence an attempt at formation of nearly all the organs of the body has been found in the lawless development of these benign growths: retinal pigment, more or less complete; optical vesicles; a rudimentary pharynx, with an attempt at the formation of an esophageal tube; the sympathetic nerves in the alimentary canal; and, curiously enough, a rudimentary uterus, with branching cells of the cervix and the glands of the fundus; mammæ, one case of which underwent carcinomatous development; an easily recognized heart provided with valves was found by Johnston; and many other more or less perfectly formed organs and tissues other than dermal have been reported by investigators too numerous to individualize. These data have, as remarked by Clark, dealt a telling, if not fatal, blow to the inclusion theory of ovarian dermoid evolution. The researches of Kraemer and others seem to establish convincingly the ovulogenous theory of their development.

DR. WILLIAM A. QUINN, of Henderson, Ky., read a paper entitled

IRREDUCIBLE, INCARCERATED, RETROFLEXED GRAVID UTERUS, and reported a case.

The author stated that the pregnant uterus may become retroflexed by reason of great laxity of the uterine ligaments, which constitute the sling that holds the organ in position. It may become incarcerated by adhesions formed before conception takes place, or by the cervix pressing against the pubic arch, lifting the bladder out of the pelvis, elongating the urethra, and preventing perfect evacuation of the urine, which has a tendency to force the fundus down under the promontory of the sacrum. Softening of the lower segment, which takes place in the gravid uterus, lessens its self-support and its resistance, and robs it of its natural power to rise out of the pelvis and correct its position. With the persistence of the conditions which cause the retroflexion and the rapidly increasing size of the uterus, it soon becomes incarcerated and cannot free itself. If the condition is recognized at or before the end of the third month, if adhesions and other complications are absent, often it is only necessary to thoroughly evacuate the bladder and lower bowel, and the uterus will free itself; or it may sometimes be necessary to place the patient in the knee-breast position, and even to administer an anesthetic, and it will require the employment of no unusual skill to easily and readily restore the organ to its normal position. Lusk, in his work on obstetrics, mentions E. Martin's 16 cases, in 4 of which spontaneous reposition followed the evacuation of the bladder, and in 11 reposition was accomplished in the knee-elbow position. Lusk himself has never met with a case of irreducible, incarcerated gravid uterus.

One very prominent etiological factor in the causation of this condition, which is not mentioned by any of the authorities on obstetrics, is unrepaired former injuries to the pelvic floor. An incarcerated, retroflexed gravid uterus, with the fundus snugly fitting down into the hollow of the sacrum under the promontory, meeting with no resistance from the pelvic floor as pregnancy advances, goes on increasing uniformly in size until at about four and a half months it will be found to have so moulded itself to the pelvis as to become irreducible. The author quoted Hirst, who, in his work on obstetrics, gives an illustration from a frozen section of irreducible retroverted uterus of three and a half to four months, with death from rupture of the bladder. Hirst likewise mentions a collection of 51 fatal cases. The following, in order of frequency, were the causes of death: Uremia and exhaustion, rupture of the bladder, septicemia, peritonitis from inflammation of the bladder, pyemia, rupture of the peritoneum and of the vagina, and errors in treatment, and gangrene of the colon.

Dr. Quinn then narrated the following case: Mrs. S., a white woman, of average intelligence; was the wife of a farmer. She had had previously four normal labors. In her first labor

she had a complete tear of the perineum. All of her life, when menstruating, her periods had been normal and regular. In eight or ten months after each of her first labors she began menstruating, but after the fourth labor it was about two years, then her periods came on and continued regular and normal every month until the month before the operation. She had never had a miscarriage. He saw the case about the middle of July in consultation with Dr. Dunn, the attending physician, who informed him that in his opinion it was an irreducible, incarcerated, retroverted gravid uterus. He stated that he and his colleague, Dr. Johnson, had carefully emptied the patient's bladder and placed her in the knee-breast position; had exhausted their skill in efforts to replace the mass, but failed to do so. They then administered an anesthetic and tried replacement of the organ again, but without success. Upon examining the patient Dr. Quinn found the bladder enormously distended, reaching into the abdomen to a point about two inches above the umbilicus. It was emptied with difficulty by catheter, and a large, hard, unyielding mass, which completely filled the pelvic cavity, was found. The perineum having been previously torn, the tumor pressed down low upon the pelvic floor. It was with difficulty that the index finger could be introduced into the vagina or rectum, and it was no easy matter to introduce a catheter into the bladder. The os was found flattened against the pubis and as high as the length of the vagina would let it rise, and could be reached with difficulty. The acute flexure was situated just above the internal os. The rectum was pushed against the sacrum until only soft, ribbon-shaped feces could escape. With the hand on the abdomen, feeling through the thin wall, the mass was found to curve very slightly from the arch of the pubis toward the promontory of the sacrum, under which it fitted snug and fast. Upon the most careful conjoined manipulation no elasticity or fluctuation could be made out. It seemed to be as unyielding as the hardest fibroid, and gave one very much the same impression that one of those cases does in which a large myoma forms a perfect cast of the pelvis and becomes impacted so tightly that after the abdomen is opened it has to be dragged out of its bed with obstetric forceps and by sheer force. Medicine being of no avail, except morphine to control pain, and a spontaneous cure being absolutely out of the question, and all efforts at relief by manipulation having signally failed, resort to surgical interference was had. The patient was removed to the sanitarium, and on the morning of August 3 a median incision about four inches long was made, which exposed a very remarkable and unusual sight, namely, the uterus in extreme retroflexion, the fundus bearing hard down upon the perineum, the organ resembling very much a tumor with a twisted pedicle. As the uterus could not be replaced in its normal position, it was lifted into the abdominal cavity. The tissues, which were softened and extremely vascular, had broken down under the operator's hands. The author concluded that if he closed and let the uterus and appendages

remain with all of the necrotic tissue, the infection already existing would be increased and death would undoubtedly ensue from septic peritonitis. Extirpation promised the best result, and it was done as follows: A thread of cable silk was passed around the uterus just above its junction with the vaginal vault, and the uterus amputated through the neck; the uterine arteries were secured, and the stump transversely closed with a row of interrupted catgut sutures. The cable silk ligature which had been thrown around the mass was removed and the stump dropped back into the pelvis. Just before closing the abdominal incision he was startled by noticing that the cavity was rapidly filling with blood. A quick examination revealed that the tissue had crumbled under the ligature. Checking the vessel with a hemostat and with a curved needle, another ligature was placed about half an inch down and tied. Sponging out the cavity, hemorrhage still continued, and the right vessel was found also in bad tissue and the ligature had partially cut through. This was also tied again. Further examination showed that there was still bleeding and that neither ligature was holding, and there was great danger that the patient would die on the table from hemorrhage. The bleeding points were caught and tied as fast as possible. Finally, about an inch and a half below the point of the first ligature, tissue was found which held the ligature and bleeding was controlled. The cavity was quickly washed out with hot normal saline solution and left full. The wound was closed by through-and-through silkworm-gut sutures and the patient put to bed.

Upon examining the specimen the uterus was found to contain a fetus, the arrest of development of which seemed to have occurred between the fifth and sixth months of fetal life. The low fever which had been present continued for two or three weeks and delayed what would have been an unavoidably slow recovery, but the woman returned to her home in six weeks from the time of the operation, has since been able to attend to her household duties and to take care of her children. He was not aware at the time of the operation that abdominal section had ever been advised or practised before in cases of irreducible, incarcerated, retroflexed gravid uterus. The most recent works on obstetrics contain no mention of it.

In searching the literature the author finds that celiotomy has been done in these cases by seven surgeons, and said that to Dr. Mann, of Buffalo, belongs the credit of first doing celiotomy for this obstetric complication.

The following officers were elected for the ensuing year: *President*—Dr. Manning Simons, of Charleston, S. C.; *Vice-Presidents*—Drs. George H. Noble, of Atlanta, Ga., and L. C. Boshier, of Richmond, Va.; *Secretary*—Dr. W. D. Haggard, Jr., of Nashville, Tenn.; *Treasurer*—Dr. Floyd W. McRae, of Atlanta, Ga.

Richmond, Va., was selected as the place for holding the next annual meeting; time, third Tuesday in November, 1901.

REVIEWS.

REFERENCE HANDBOOK OF THE MEDICAL SCIENCES. Edited by ALBERT H. BUCK, M.D. Revised edition, in eight imperial octavo volumes, illustrated by chromo-lithographs and over five thousand line and half-tone engravings. Price, \$7 per volume. New York: William Wood & Company, 1900.

The first edition of the "Reference Handbook" appeared in the years 1885, 1886, and 1887; since that time there have been so many advances and changes in the different branches of medical science that the editor and publishers found it to be absolutely necessary to rewrite and completely revise the work. In the revision the different branches of medical science have been reviewed by the leading specialists of the United States and Canada.

The material consists of a collection of concisely written essays on all important topics belonging to medicine, surgery, and the allied sciences. The subject-matter is arranged in alphabetical order, thus enabling one to turn to the object of his search at once. The men who have written these essays make up a list such as has never before been gathered together on any medical work.

The endeavor has been to write in as concise, definite, and terse a manner as possible, and the result greatly increases its value as a reference work for the busy physician as well as for the man who is in search of knowledge in the different branches of medicine merely for love of knowledge.

The first volume, which has just come from the publishers, is handsomely and substantially bound. It covers subjects from A to B1, and contains eight hundred pages and four hundred and ninety-eight half-tone and wood engravings, also several very fine chromo-lithographs. The type at first impresses one as being rather small, but it is very clear and easily read.

The articles on all the principal subjects are very full and yet concise; they are easy and interesting to read, covering all the necessary points and leaving out all waste material. Whenever it has been deemed advisable the authors have inserted engravings to help to elucidate the text. The engravings are clear, and a large number of them are original. In looking through this first volume the reviewer's attention was attracted by a paragraph under the subject "Anesthesia," in which the author speaks of medullary narcosis; he states that fifteen minims of a one per cent solution of cocaine injected into the lumbar spinal region will suffice to render insensitive to pain for a half-hour or more the lower half of the body. He doubts if this method of anesthesia will ever be-

come universal, on account of the disagreeable symptoms of vomiting, pain in the back and legs, and the attacks of severe headache, which in some cases last for days. The article on bacteria gives an interesting review of the development of bacteriology from the time of Athanasius Kircher, a Jesuit priest, in 1671, to the discovery of the bacillus of bubonic plague by Kitasato in 1894. This article is well illustrated and describes all the bacteria which are known to cause a definite lesion.

The article on amputations is especially full, clear, and well illustrated. Another interesting article is the one on the bladder.

One could go on indefinitely picking out the good points in this volume, as the articles are well written by men who have had experience and can back their statements. J. G. W.

OBSTETRICS. *A Manual for Students and Practitioners.* By DAVID JAMES EVANS, M.D., Lecturer on Obstetrics and Diseases of Infancy, McGill University, etc. Lea's Series of Pocket Text Books. Edited by BERN B. GALLAUDET, M.D., Demonstrator of Anatomy and Instructor in Surgery, College of Physicians and Surgeons, Columbia University, etc. Pp. 417. Illustrated with 149 engravings. Philadelphia and New York: Lea Brothers & Co.

At first glance one would naturally inquire, "Why another text book of obstetrics, except to complete a series of pocket text books?" The work shows considerable abridgment of the contents of larger obstetrical books, by briefness of reference to rarer conditions and complicated operations, and by transfer of the subjects of the physiology and pathology of the new-born to another volume of this series. The material has been well selected; the treatment advised is, in general, good. It is noticeable, however, that for examinations and labor the lateral position is advised. Under the subject of forceps deliveries the technique for both dorsal and lateral positions is described. The writer advises immediate suture of perineal tears before birth of the placenta, as the patient may still be partially under an anesthetic. The sutures are tied after completion of the third stage. H. D.

LESSONS ON THE ANATOMY, PHYSIOLOGY, AND HYGIENE OF INFANCY AND CHILDHOOD, FOR JUNIOR STUDENTS. By ALFRED C. COTTON, A.M., M.D. Pp. 174. Chicago: Chicago Medical Book Co.

Feeling that the average student usually approaches the study of diseases of children with little or no appreciation of the normal conditions and functions of the growing child, the author has compiled from his lectures to junior students at Rush Medical College this work on the anatomy, physiology, and hygiene of the developmental period. Beginning with the anatomy of the new-born, he describes the changes occurring during growth. He then considers the physiology and

hygiene of the new and of the prematurely born, and subsequently of the first year. A large amount of space is naturally devoted to the subject of feeding. The physiology and hygiene of childhood are discussed, and the book ends with a chapter upon physiological abnormalities of the new-born. H. D.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia, etc. Assisted by H. R. M. LANDIS, M.D., Assistant Physician to the Out-Patient Medical Department of the Jefferson Medical College Hospital. Vol. IV., December, 1900. Diseases of the Digestive Tract and Allied Organs, the Liver, Pancreas, and Peritoneum; Genito-Urinary Diseases and Syphilis; Fractures, Dislocations, Amputations, Surgery of the Extremities, and Orthopedics; Diseases of the Kidneys; Physiology; Hygiene; Practical Therapeutic Referendum. Pp. 428. Philadelphia and New York: Lea Brothers & Co., 1900.

This volume completes the set for 1900. Its contents are not such as to demand an extensive review in a journal devoted to obstetrics, gynecology, and pediatrics. The contributors to this number are: Henry B. Baker, of the Michigan State Board of Health; William T. Belfield, Associate Professor of Surgery in the Rush Medical College; Joseph C. Bloodgood, Associate in Surgery in the Johns Hopkins University; John Rose Bradford, Professor of Materia Medica and Therapeutics in the University College, London; Albert P. Brubaker, Adjunct Professor of Physiology and Hygiene in the Jefferson Medical College; Max Einhorn, Professor in Medicine at the New York Post-Graduate Medical School; and E. Q. Thornton, Demonstrator of Therapeutics in the Jefferson Medical College. The book leaves as favorable an impression as its predecessors. H. D.

TRANSACTIONS OF THE EDINBURGH OBSTETRICAL SOCIETY. Vol. XXV., Session 1899-1900. Pp. 237. Edinburgh: Oliver & Boyd, 1900.

The present volume comprises the transactions of the sixty-first session of this well-known society. The book contains a number of interesting papers upon obstetrical and gynecological subjects.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Accidental Hemorrhage simulating Ruptured Ectopic Pregnancy.—In a case reported by A. Olivier¹ a pregnant woman lost some blood by vagina, and a tumor reaching

above the umbilicus was taken for an extraperitoneal ruptured ectopic gestation. Operation showed only a distended uterus. Pregnancy continued, and a well-formed child was born at eight months. The membranes showed a quantity of old blood clots.

Operations during Pregnancy.—A. Spinelli¹ removed by laparotomy from a woman four months pregnant a uterine fibroid which, though not observed by another examiner six months before, weighed three and a half kilos. Abortion followed. During a subsequent pregnancy vesical symptoms, present to a slight degree before, became severe, and vaginal cystotomy showed two large calculi which had developed upon the silk ligatures employed in the former operation and subsequently eliminated into the bladder. This pregnancy terminated normally.

Treatment of the Umbilical Cord.—Porak¹ again advocates the use of the omphalotribe, which he believes a great aid in securing asepsis of the cord. A. Martin¹ first ties the cord and then burns the distal extremity of the stump. Bar¹ employs a clamp upon the cord close to the level of the skin. Pinard¹ holds that the older method of tying the cord with strong sterilized tape, cutting with sterile scissors, and applying an antiseptic dressing gives as good results and avoids the multiplication of instruments.

Treatment of Apparent Death of the New-born.—Ribemont-Dessaignes¹ mentions the various methods of removing mucus, etc., from the air passages and stimulating the peripheral nerves in order to start respiration. In cases in which wiping out the pharynx, rubbing, hot and cold baths, and similar measures fail, he prefers instrumental insufflation. For this purpose he has devised an intubation apparatus which he claims allows easy aspiration of mucus and permits the entrance of only a limited quantity of air into the lungs, avoiding the danger of rupturing the walls of the air vesicles.

Champneys¹ also favors this method. He opposes mouth-to-mouth insufflation as exposing to rupture of the lungs, tuberculosis, and distension of the stomach. Of methods of manipulation, he considers those of Schultze and Sylvester as possessing merit, and those of Marshall-Hall and Howard as useless in children.

The rules observed by Schultze¹ are: 1. If the child is reddish-blue he leaves the cord uncut, wipes out the mouth, and excites cutaneous reflexes. If there is no immediate response he cuts the cord and plunges the child for an instant into a cold and then a hot bath, repeating until it cries vigorously. 2. If the child is pale and flaccid, he cuts the cord at once, wipes the pharynx, and performs artificial respiration by Sylvester's method or his own, with occasional use of the hot bath. If respiration remains superficial the iced bath is also used.

Draghiescu¹ employs at the Maternity Hospital at Bucharest wiping out, aspiration of mucus by a tube, mouth-to-

mouth insufflation, followed by artificial respiration by pressure upon the chest and the abdomen. Oxygen insufflation is sometimes of value.

Eclampsia.—Bouffe de Saint-Blaise¹ publishes three cases of eclamptic attacks without albuminuria. In the first there were traces of albumin during the two days intervening between the onset of convulsions and death. In the two others there had been some general signs of intoxication, but no albuminuria at any time. The urine contained bile.

Mangiagalli² reports 17 recoveries out of 18 cases of eclampsia treated with *veratrum viride*.

Porak³ divides his cases into three groups. During the first period he treated 50 by purgation, bleeding, and chloral, chloroform or morphine, with 16 deaths. During the second he employed subcutaneous injections of normal salt solution in 41 cases, with 12 deaths. His last 47 cases were submitted to rectal irrigation, phlebotomy followed by infusion of salt solution, freedom from irritants, particularly avoiding the ingestion of liquid during the attack. If rapid delivery is demanded manual dilatation of the cervix is advisable. Only 3 deaths occurred in the last group.

Stranganoff⁴ advises the following treatment: 1. After the first attack, narcotics for twelve to forty-eight hours. A combination of morphine and chloral is preferred by the writer. 2. Securing regularity of the respiratory system and heart. 3. Removal of irritation of all kinds. 4. Hastening labor when this involves no serious danger to mother or child. Stranganoff has treated 92 cases in this manner, with 5 deaths.

Prevention of Phlegmasia Alba Dolens.—With a view to preventing this affection, Hagapoff⁵ has been in the habit of raising the feet of all women during the puerperium by a cushion for at least ten days after the fourth day. If there is fever the legs are wrapped in flannel and elevated still more for at least fifteen days. If any varicosities exist, friction with alcohol is also employed.

Perineoplasty by Clamp Method.—Hagapoff⁵ has operated for complete laceration of the perineum, using clamps instead of sutures. The rectal clamp fell off on the fifth day, the vaginal on the sixth, primary union resulting. He claims the advantage of saving the time needed for suturing and preventing infection of the wound by vaginal and rectal secretions.

Arterial Tension in Pregnancy, Labor, and the Puerperium.—Queirel and Reynaud⁶ have conducted observations upon 68 women, as a result of which they conclude that arterial tension is diminished after the eighth month of pregnancy, being normal before that time. During labor the tension is above normal and increases up to the moment of birth. It then falls to below normal, reaching the minimum at the time of expulsion of the placenta. It rapidly increases to above normal, remains so for four or five days, and then returns to

normal. Subnormal tension was noticed in hydramnios, grippe, lobar pneumonia, before hemorrhage, and in abortion. Increased tension was observed in hysteria, eclampsia, and albuminuria.

Diet in Pregnancy.—Hagapoff¹ submits women during their entire pregnancies to what he calls alternating mixed diet, consisting of milk in some form on one day, and nearly a regular diet, excluding dark meats and a few other substances, on the next. He holds that toxic substances accumulated during the days of regular diet are eliminated on the intervening days while taking only milk. He claims that in 15 primiparæ he had warded off such accidents as eclampsia, albuminuria, vomiting, psychical troubles, gingivitis, caries and dental neuralgia due to elimination of toxins in the saliva.

GYNECOLOGY AND ABDOMINAL SURGERY.

Suppurative Peritonitis.—J. R. Wallace¹ cites a case of suppurative peritonitis occurring in a child 4 years old. It was decided to do a laparotomy, and the child was accordingly scrubbed and dressed for operation. When the dressing was removed a small opening was made above the umbilicus by the pulling away of a portion of skin which had become attached to the dressing; through this opening twenty-four ounces of pus escaped. After this spontaneous evacuation the child improved rapidly.

Kraurosis Vulvæ.—G. I. Himmelfarb¹ reports a case of this rare affection—shrinking of the pudenda. The patient was 31 years old and had had three children and one abortion. Since the latter, three years previously, menstruation had been painful and profuse. Pruritus of the external genitals began two years previously and had greatly increased in the past two years. Micturition was painful and difficult, alternating occasionally with incontinence. There were sensations of tension, weight, pulling, and sometimes pain in the pelvis. Urine was normal. The genitalia were notably shrunken, the labia majora being merely two folds, the nymphæ reduced to small projections. The perineum was lacerated to the second degree. The tissue of the labia and vestibule was of a grayish color. The skin was dry and friable, with many small fissures. Vagina hyperemic, without folds. Vaginal portion of uterus much shrunken; body of uterus anteflexed, and its cavity 8 centimetres long. A microscopic examination of a portion of skin and of vaginal mucosa showed the characteristic anatomical changes of kraurosis. Almost nothing is known of the etiology of this disease. It is found in adult life and in old age, in virgins and in married women. Pruritus is not always present, although Veit holds that the irritation and scratching induced by it lead to inflammation and then to retraction. The course of the disease is chronic and very slow, taking from eight to perhaps twelve years. As to prognosis, a skin affected by kraurosis is predisposed to cancer. Treatment consists in excision of the vulva.

Menstrual Changes in Typhoid Fever.—Vénéta Georgi-éva^{*} states that typhoid fever does not, at its onset, suppress menstruation, but even tends to cause uterine hemorrhages. During the course of the disease menstruation and uterine hemorrhages become more rare, and are extremely so toward its close. The disease is always followed by amenorrhea, lasting usually three months. Uterine hemorrhages at the time of invasion are often a sign of the severity of the case; during the course they make the prognosis worse. Their appearance does not contraindicate bathing, and their treatment is that of loss of blood from any mucous membrane.

Influence of Alcohol upon Population.—Arrivé^{*} has collected statistics of 402 French families which furnished 1,648 conceptions. Syphilis was eliminated and tubercular history carefully sought for. Alcoholism appeared not to influence fecundity, unless the parents were the issue of alcoholic progenitors, in which case sterility was found to be frequent in the first and to increase in subsequent generations. Alcoholism of the parents leads to premature birth and is a more active abortifacient than tuberculosis; it increases the number of stillbirths. The children of alcoholic parents die most often of meningitis or congenital feebleness. Alcoholism causes physical and mental degeneration of many descendants.

Psychoses of the Menopause.—J. B. Chapin^{*} attempts to show that there is not sufficient clinical experience to warrant the recognition of a distinct class of insanities as due to the normal ending of an animal function. He believes it is the duty of our profession to remove the unfounded perturbations that worry and distress so many persons as they approach the menopause.

Operative Treatment of Complete Prolapse of the Uterus in Elderly Women.—A. L. Smith^{*} concludes that elderly women stand operative treatment for prolapse remarkably well. The operation of vaginal hysterectomy is especially easy in those cases not having more than one per cent mortality. Ventrofixation gives good results when the uterus is short, but fails when it is long. In some cases the vagina and bladder pull down and elongate the cervix after the fundus has firmly attached to the abdominal wall. In either case, whether hysterectomy or ventrofixation be employed, it should be followed by an anterior and posterior colporrhaphy. The patient should remain in bed for six weeks after the operation, in order to give time for the new tissue to become strong. It is a mistake to think that she is too old to undergo an operation because she is 45 or 50 or even 75 years of age.

Indications for the Removal of the Uterine Appendages.—J. M. Lawrie^{*} believes that the ovaries and tubes require to be removed in the following conditions: chronic ovaritis, salpingitis, and cystic disease of the ovary, when palliative methods have failed to afford relief; suppurative diseases, *i.e.*, pyosalpinx, tubo-ovarian and ovarian abscess; fibromyoma of the uterus of moderate size, either when the

ovaries are diseased or when the patient has been so debilitated by prolonged hemorrhage that hysterectomy would be especially risky; and in cases of tubal pregnancy. Mere neurosis, apart from organic disease, is not to be regarded as an indication for oöphorectomy under any circumstances. He believes puncture and resection of the ovaries and tubes is in most cases unsatisfactory, and that for pyosalpinx the abdominal is usually preferable to the vaginal route.

Intestinal Obstruction following Hysterectomy.—A. Goldspohn⁹ discusses two cases of intestinal obstruction which followed vaginal hysterectomy. In both cases secondary abdominal incisions were performed; one case died, the other made a good recovery. He also reports another case of intestinal obstruction which followed the opening of an abscess of the pelvis by the vaginal route. In this case a secondary ventral incision was made, but was unsuccessful.

Crushable Button in Intestinal Anastomosis.—R. C. Coffey⁹ favors a crushable button, as it can be crushed at the end of the operation, and in this way no foreign body is left at the seat of operation. He also prefers a continuous suture.

Operation without Preliminary Hemostasis.—A. Goubaroff¹⁰ favors this method of operation because of the facility of distinguishing the tissues and their topography, the absence of venous hemorrhage, and impossibility of secondary hemorrhage. It also minimizes the danger of infection by diminishing the number of ligatures used. Tension upon the tissues and their compression is also avoided—an impossibility when ligation *en masse* is employed.

Intestinal Obstruction.—Lauwers¹¹ has operated upon a case of subacute intestinal obstruction caused by the presence of several bands of adhesions. These were divided between ligatures. They had resulted from a tubercular peritonitis. Immediate results were favorable.

Examination of the Sigmoid Colon.—A. W. Abbott,¹² when examining the colon, follows the method given below: The patient is given a cathartic two nights preceding the examination, and on the following night a high enema. The patient is placed on a table in the left lateral position, the hips being elevated about six inches on a sand-bag. If a table can be utilized that will lower the head and elevate the buttocks as much more, it will be an advantage. The knee-chest position is also very satisfactory. A good electric forehead lamp with darkened room makes the best condition. An ordinary short Sims speculum introduced on the coccygeal side will now display the inner surface of the rectum, so that the so-called valves can be seen with perfect distinctness. A straight retractor eight to twelve inches long is now passed on the pubic side, and just after the point has passed the valves, and under the guidance of the eye, the point is carried slightly to the patient's right and then to the left and forward, when, under normal conditions, the instrument will glide easily to its full length and the whole lumen of the bowel is brought into view. Any force used in

pushing forward the instrument in the bowel is not only unnecessary but dangerous. The instruments can be shifted, so that any part of the surface can be seen. Dilatation of the sphincter ani, of course, aids materially in the admission of light, besides giving more room for manipulation. In the male the introduction of a long instrument is not quite so easy and the distension, and consequently the view of the bowel, not quite as satisfactory.

Treatment of Gallstone.—S. C. Gordon¹² believes that operations should be performed after it is well established, by repeated attacks, that gallstones are present; that gallstones may be present in the gall bladder for years without giving colic, but are a cause of more or less digestive disturbance and impairment of the general health. From his experience he is satisfied that many cases are better treated at the time of operation by closing the bladder, dropping it back into the cavity, and closing the abdominal wound. Cases treated by drainage are, in many instances, slow to recover and liable to be left with biliary fistula for a long time. The bladder should be rendered as nearly aseptic as possible before closing it.

Recto-vaginal Excision.—Herbert Snow⁶ discusses two cases of recto-vaginal excision done for high rectal cancer. Both cases made good recoveries. Snow remarks that so long as the gut remains mobile cancerous disease of very long standing can be here removed, and as in the infiltration, which appears "woody" to the touch, secondary deposits occur but tardily and can often be permanently eradicated. By manipulation the dissected part can nearly always be brought down and safely excised without any interference with the bony structures, as advised by Kraske, Madelung, and others.

Posterior Colpoceliotomy.—Charles G. Cumston⁷ sums up the lesions which may be removed by the posterior vaginal incision as follows: 1. Inflammation of the adnexa with prolapsus in the cul-de-sac. 2. Cysts of the adnexa of small size. 3. Neoplasms situated high up in the pelvis, but which can be pulled down. 4. Large cystic, non-adherent tumors, the lower pole of which can be easily reached through the vagina upon digital examination. 5. Solid neoplasms of the recto-uterine cul-de-sac which do not exceed the breadth of the posterior vaginal cul-de-sac. 6. Extrauterine pregnancy. The contraindications are extensive adhesions, a high position of the adnexa and the uterus, and the inability to bring them down. If the adnexa are adherent in the paravesical fossa, anterior colpotomy is the operation. A malformation or tight vagina is also a contraindication.

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DISEASES OF CHILDREN.

Acute Cervical Lymphadenitis in Children.—Alfred Hand¹ reports 8 cases, and states that while they do not furnish much material for many deductions, yet emphasis may justly be laid on the value of 25 per cent ichthyol ointment when applied thoroughly and persistently. Its influence seems to be not only in the direction of shortening the course of the adenitis, but, in the severe cases, of preventing suppuration. While it must be admitted that suppuration is not the regular event, such a termination has been reported, and in these three cases it seemed inevitable.

Acute Nephritis following Influenza.—Rowland Godfrey Freeman² concludes that although albuminuria is fairly frequent with influenza, nephritis is a rare complication. The nephritis complicating influenza is clinically of the acute hemorrhagic type and morphologically shows toxic lesions. It apparently attacks children more often than adults. The kidney disturbance may appear a few days after the acute symptoms of the influenza or as long as a month later. The prognosis is good.

Antitoxin in Cerebro-spinal Meningitis.—Francis M. O'Gorman³ was called to see an infant which was in a comatose condition, from which it would arouse with a general clonic convulsion lasting from two to five minutes. An apparent obstruction in the throat, and the various symptoms, together with the condition of pulse, temperature, and respiration, caused a diagnosis of broncho-pneumonia and laryngeal diphtheria. One thousand units of antidiphtheritic serum were injected at once; in two hours the temperature had fallen from 105° to 103°, the respiration from 95 to 86, the convulsions had almost ceased, but the pulse remained at 190. Five hundred units were injected and the breathing became easier. The child remained in stupor all day and all night. The next morning the breathing again became difficult, and another 1,000 units of antitoxin were injected with the same results as before, and followed, as before, by 500 units in the afternoon. Oxygen was then administered uninterruptedly for four days, and then for fifteen minutes every hour, and finally three or four times daily. The breathing remained at 72 for ten days, and then came down in jumps of 10 and 14. The pulse remained between 150 and 182 for about two weeks, and then fell to 140, where it anchored, even after the lungs cleared. Recovery was complete, and the child enjoyed the best of health for two months. Then came convulsions which neither urethane nor chloroform could control, and the patient died of cerebro-spinal meningitis. The writer believes that the extraordinary pulse and respiration of the previous illness were due to a latent inherited inflammation, as the father has since given him a history of the disease in his family. He is fully satisfied that the antitoxin had a beneficial effect upon the convulsions in the previous attack, and also that the child had diphtheria and pneumonia; three physicians who saw the case

corroborated his diagnosis. A question upon which he invites comment is: Did the antitoxin administered in the first attack have any influence on the pulse, respiration, and convulsions, which he believes to have been due to meningeal inflammation? Also, is he right in thinking that had an antitoxin been used in the last attack the child might have recovered?

Carbonic Acid Gas per Rectum in Pertussis.—G. Le-grand Kerr ' reports a number of cases in order to call attention to a means of possible relief and alleviation in those cases of pertussis where there is a complication or, more particularly, a drug intolerance. While the results have not been uniformly satisfactory, there has been enough success to warrant a more extended trial. The technique is simple and as follows: A wide-mouthed bottle of at least one pint capacity and provided with a tightly fitting cork is perforated through its centre so as to admit a glass tube, which is adjusted so that the end reaches half-way up to the bottom of the bottle. To the external end of the tube are attached about three or four feet of flexible rubber tubing. To the free end of this is attached an ordinary hard-rubber nozzle, convenient for rectal injections. The bottle is filled one-third with water in which have been dissolved about six drachms of bicarbonate of soda. To this are added about four drachms of tartaric acid crystals. The bottle is now kept stationary, and as the tartaric acid dissolves slowly the gas is liberated at the proper rapidity for administration. The rectal tube being inserted, the gas is given for from five to ten minutes, according to age of child. Two or three treatments daily are sufficient, preferably given between meals. Ephraim explains the effect as the result of the increased quantity of oxygen which reaches the air vesicles, there to be exchanged for the larger amount of carbonic acid contained in the blood in consequence of absorption from the rectum.

Cough in Influenza simulating Whooping Cough.—F. Forchheimer ' describes a cough the peculiarities of which are as follows: It always moved in epidemics; it was decidedly contagious. If it broke out in a family, few or none of the family were spared, irrespective of age. The onset was that of an ordinary attack of influenza. In children there was fever, and principally the form of the respiratory or gastrointestinal type of influenza. These symptoms would pass over in from two to four days, and then would begin a cough. It usually first develops at night, but not so distinctively as in whooping cough, as the attacks would appear during the daytime as well. The cough is that of pertussis, except that the peculiar whoop is not so characteristic. It is accompanied by the ordinary congestive symptoms of whooping cough and followed by vomiting and expectoration. The mouth differs from whooping cough in that the peculiar blue color of the mucous membrane and of the tongue is absent, which is to be attributed to the fact that the attacks of coughing are more numerous but not so long in duration as those of whooping cough.

The ulcer of the frenulum is present and even better marked than in pertussis. The complications and sequelæ are largely those of whooping cough; some, however, must be ascribed to influenza. In the presence of a house epidemic of this form of trouble, or even when it is generally epidemic, the author has found that *full* doses of quinia materially reduce the duration of the disease. But the dose must be sufficiently large, not less than one decigramme less than the age in years and one centigramme less than the age in months. The quinia cuts the disease short only when it is given in full doses and given early. When the cough has developed thoroughly, phenacetin or antipyrin gives great relief. Codein may have to be given in bad cases, and chloral to insure sleep. Mild symptoms of septicemia are not infrequent, in which case unguentum Credé or even the injection of streptococcus serum may be of benefit.

Diabetes Mellitus in Children.—Henry Dwight Chapin^{*} first calls attention to the exceeding rarity of this disease. He has the urine examined of all the children in the babies' wards of the New York Post-Graduate Hospital, the Willard Parker and the Riverside Hospitals, yet it is exceedingly rare to find any sugar in the urine. The second point which he makes is that the disease is very fatal in young children. Why this is so he is at a loss to explain. In both the cases which he reports there was no evidence of assimilative disturbance and the children had been in a state of good nutrition. In looking up the literature he found one case which had recovered, but in the light of our present knowledge he doubts whether in this case the diagnosis was correct. The third point which he makes is that this disease in children is accompanied by extremely rapid emaciation. Whenever a child is brought to the physician with a rapid atrophy he should examine the urine for sugar. The statement should be emphasized that this is one of the diseases of childhood which produce rapid atrophy.

Rachitis, Treatment of, with Suprarenal Extract.—Neter¹¹ used Merck's preparation of "rachitol" in twenty-eight cases of rickets without any ill effects, but also without any improvement in the rachitic symptoms. Neither the craniotabes nor the other bone lesions improved, and the ability to stand or walk did not progress, even after several months of treatment with the suprarenal substance.

Sarcoma of Suprarenal Capsules in a Child Seven Weeks Old.—John Orr¹² reports a case which presented especial difficulties as to diagnosis. There were few symptoms, and one had to rely entirely on the physical signs. There was apparently simultaneous and equal enlargement of the liver and spleen, without pain, tenderness, nodulation, or irregularity of either organ. It was never doubted by any of the physicians who saw the case that the swelling in the left side of the abdomen was other than a splenic enlargement. At the autopsy, however, it was found that the supposed spleen was a huge left lobe of the liver, which extended away under the

left costal arch, descended down the left postero-lateral abdominal regions, was separate from the right lobe from the level of the umbilicus downward, and had the exact contour of the lower half of the spleen. The latter organ was absolutely normal and lay behind this left hepatic lobe. The enormous hepatic enlargement was sarcomatous, and the primary seat was discovered in the back of the abdomen in the right suprarenal capsule. The features of especial interest in this case are the following: 1. The extreme youth of the patient. The patient came first under the writer's notice at the age of 7 weeks, and there had been noticeable abdominal swelling for two weeks previously. This is the youngest case on record. 2. The entire absence of any symptoms pointing to the organ affected. One would have expected involvement of or pressure on the kidney, but such never did occur. 3. The absence of all bronzing, or cutaneous or mucous pigmentation of any sort, which seems to be a point of distinction between malignant disease of the suprarenal capsules and tuberculous affections of these organs associated with Addison's disease. 4. The peculiarly smooth, uniform character of the secondary hepatic enlargement, and especially the deceptive and misleading enlargement of the left lobe.

Sudden Death in Childhood.—M. Paravicini " considers sudden death to be rather frequent in early childhood, occurring toward the end of infectious diseases. It occurs from convulsions, spasm of the larynx, syncope, and pulmonary congestion. To guard against it we must, in the first place, regulate the diet. In the second place, we must use only medicines which are known to be without danger to infants and children. Baumel says that medicines act rapidly and with intensity in early life because of the excessive vitality of the cells of the organism, the shortness of the circulatory system, and the frequency of the cardiac contractions, which cause the drug in a given time to come more often in contact with the various organs than in adults. For some drugs, however, children have greater tolerance than adults. Sudden death may follow the administration of violent emetics. Quinine is capable of producing it. Emetics are absolutely contraindicated when there is cardiac depression, also in pneumonia. In capillary bronchitis they may be useful, but only when the patient coughs and has a tendency to expectorate, after the disease is cured and the fever gone. They are indicated in gastric disorders, in convulsions, and at the onset of eruptive fevers. Mineral emetics should never be given to a child under 2 years of age. The greatest attention must in all cases be paid to the condition of the heart. In pleurisy, pertussis, pulmonary tuberculosis, thoracic rachitis, Pott's disease, scoliosis, and bronchial adenopathy, emetics must be avoided, because the heart is depressed.

The Psychoses of Puberty.—Marro, of Turin, " from his own special studies and observations, reaches the following conclusions: 1. Puberty exercises a notable influence upon the psychological life, which is manifested sometimes in giving to prevail-

ing mental symptoms qualities which they did not have before or which they had only to a slight degree, at other times in the preparation of a way for the invasion of psychoses. 2. Among the psychoses which are prone to attack boys and girls at the age of puberty, hebephrenia of Hecker may be regarded as specific. Its specificity is determined by the union of characteristics which it shares with other psychoses, but which are found united in this variety alone. 3. The morbid manifestation of this particular form of psychosis and its alteration determined by microscopic examinations shows that the cerebral cortex and the meninges are the seats of a morbid anatomic process. The symptoms of invasion tend to prove with a certain degree of probability that the source of the process is derived from an auto-intoxication caused by disturbances in the gastro-intestinal tract. 4. Other morbid manifestations originate from this age of puberty and from the precocious and abnormal generative activity, the influences of which impress a peculiar type upon the character of the individual more or less permanent, although age and favorable conditions of life may efface its evidence. 5. The prophylaxis of the mental symptoms demands that the greatest attention should be given to the avoidance of all causes of enfeeblement which could interfere with the development of the physical and mental organism during this epoch, which is so important for life, such as excess of fatigue either physical or intellectual, and, before all, the precocious and abnormal exercise of the sexual activity.

Jules Voisin, " writing on the same subject, thus concludes: 1. By the psychoses of puberty are meant the mental affections which develop during the period of puberty, that is, between 14 and 22 years. This period is characterized by sexual maturity and by the physical and intellectual development of the individual. 2. Every variety of psychoses can appear at this time. Hebephrenia as a morbid entity does not exist. The name hebephrenia should be reserved for the cases of dementia. The psychoses which develop at the beginning of the evolution of puberty are less grave than those which do so during or at the end of puberty. The first can be called the psychoses of puberty, while the others should be the psychoses of adolescence. 3. Hereditary predisposition is the prominent cause of these affections. It is the association of the incomplete intellectual development of the individual with heredity which gives to the disease its special name of hebephrenia. 4. The pure psychoses, or rather those most completely approaching the pure type, present atypical clinical pictures; mixed forms are curable in the majority of cases. 5. Melancholia appears most often under a grave form of stupor, accompanied by impulsive acts, imperative obsessions and hallucinations directed against the life of the individual or those of his family. At the same time very often mysticism and onanism are noted. 6. Mania presents itself but rarely in a benign form. It has often the character and presents also severe impulsive ele-

ments. 7. Dementia precox (hebephrenia), described by Kahlbaum and Hecker, presents itself in two forms—a grave and a mild one. The grave form may show symptoms of stupor, dementia, katatonia, mental confusion; it is the latter which renders the diagnosis difficult. The mild form—simple dementia precox (stigmata of mental degeneration—Morel)—must be distinguished from general progressive paralysis and spasmodic epileptic dementia. 8. Mental confusion presents delirium of dreams, omiric delirium, which has an analogy with alcoholic delirium. This omiric delirium is characteristic of the psychoses of auto-intoxication, and it is almost positive that the nutritional troubles of adolescence are the causes of this delirium. Cure takes place in most of the cases. It is announced generally by crises, sweating, diarrhea, salivation, menstruation, abscess, furuncles, etc. It can be recognized almost always by the retroanterograde amnesia, as in the polyneuritic psychoses. 9. The general progressive paralysis of the juvenile type is distinguished from the same condition in the adult by the absence of ideas of grandeur and of ambitious delirium and by its slow progress. A great many authors assign hereditary syphilis as its etiology. 10. The degenerative psychoses and the neuro-psychoses are the most frequent; they reappear generally at the adult age. 11. The medico-legal aspect of the psychoses of puberty is the same as that of insanity in general. But the cases relating to the civil capacity are omitted, as the French law does not recognize any civil capacity before 21 years. They only have to do with cases concerning criminal responsibility, which is fixed at 16 years.

The Quantity of Diphtheria Antitoxin required in the Treatment of Diphtheria.—William H. Park,* from the results of experimentation and from the observation of cases in hospitals and in private practice, has been led to adopt the following dosage:

Very mild cases.....	1,000 to 1,500 units for the first dose.
Moderately severe cases....	2,000 to 3,000 " " " " "
Very severe cases.....	4,000 to 5,000 " " " " "
Laryngeal cases, according to their severity..	2,000 to 5,000 units.

For children under one year he would give about one-third less than for older children and adults. He believes the condition of the throat, as to swelling, extent and nature of the membrane, etc., to be a better guide to antitoxin dosage than the general condition of the patient. The duration of the disease influences the curative power of the antitoxin rather than the dosage. If at the end of twelve hours after the injection the inflammation is advancing, or if at the end of eighteen hours the inflammation has not clearly begun to subside, as shown by lessened congestion and swelling, a second dose of antitoxin should be injected. In a very few cases a third dose is required at the end of twenty-four to thirty-six hours. It is better to give too much than too little antitoxin.

The Value of Using a Non-constipating Form of Iron.—H. M. Shriner¹ says that the question often arises as to whether the good effects derived from many of the preparations of iron on the market are not counterbalanced by the constipation they tend to produce. The author's attention has for the past two years been called to a preparation composed of an insoluble phosphate of iron suspended in a suitable aromatic menstruum. This of itself would be of little value, the precipitate being neutral in reaction and insoluble either in water or the hydrochloric acid of the stomach. In order to overcome this condition, the administration of the liquid is followed immediately by a small quantity of water containing sufficient sodii phosphas to convert the iron into a soluble bibasic salt of iron and sodium phosphate. The excess of phosphate acting as a mild hepatic stimulant, and in this way exerting a mild laxative effect on the bowel, as the phosphate is one of the least astringent salts of iron, it has little tendency to cause any of the gastric disturbances so often seen when iron is long continued. The author has been using this preparation largely, and the results substantiate the claims made for it. In children of tubercular tendencies, and in those suffering from anemia the result of frequent and continued attacks of gastric or intestinal indigestion, the syrupus ferri iodidi and many preparations of pepto-mangan tend to make their condition worse, the former from the difficulty with which it is absorbed, and the latter from the large doses required and the ensuing constipation. It is in these cases that the phosphatic preparation of iron has been used with so much success. The author reports several cases in detail.

Thyroid Extract in Cretinism.—L. P. de Grandpré² believes that cretinism may now be considered almost as a curable disease, so great is the improvement which follows the use of thyroid extract. The amelioration ceases if the treatment stops, however, so that a moderate dosage must be kept up. Children are very sensitive to the action of thyroid juice, and unless we begin with a small dose we may cause cerebral excitement or functional heart trouble; twenty-five centigrammes a day, divided into three doses, one to be taken with each meal, is enough to administer at first, and in very young children fifteen centigrammes would be sufficient.

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ORIGINAL COMMUNICATIONS.

COCAINIZATION OF THE SPINAL CORD BY MEANS OF LUMBAR PUNCTURE DURING LABOR.¹

BY

WILLIAM RIDGELY STONE, A.B., M.D.,
Instructor of Obstetrics, Post-Graduate Medical School and Hospital; Late House
Surgeon, New York City Maternity Hospital,
New York.

THROUGHOUT Europe, during the past summer, various surgeons have been performing major and minor operations under what was called Bier's spinal narcosis, produced by the injection of cocaine into the cerebro-spinal canal at the lumbar region.

Strange as it may seem, the many claimants for the honor of priority of this procedure have entirely overlooked American literature, by which much good paper and printer's ink have been wasted.

In the copy of the *New York Medical Journal* dated October 31, 1885, Dr. J. Leonard Corning, of New York City, first reported a case of complete anesthesia of the lower portion of the body, produced by injection of cocaine into the subarachnoid space of the spinal cord. Hence it seems to me that we

¹ Read before the Buffalo Academy of Medicine, November 27, 1900.

must of necessity render unto Dr. Corning all honor for priority of employment of the procedure, in spite of the fact that he reports but a single injection upon the living human subject.

It was not until 1899 that Bier reported his work, although he received, and is still receiving, the credit for its discovery.

In July, 1900, Kries, of Germany, reported in the *Centralblatt für Gynäkologie* the first eight cases of medullary narcosis during labor. His report is quite meagre and unsatisfactory, and from it he draws no conclusions. I was not aware of his publication when I undertook my work at the New York City Maternity Hospital, although for this reason I claim no priority or originality in employing medullary narcosis during labor.

The various surgical operations that are made possible through medullary narcosis have already been published in the medical journals throughout this country and Europe, but in no class of cases do I think it will prove to be of more practical value than in maternity cases. Here we have opportunities to relieve such suffering as has been aptly described as simulating the "torments of the damned," and justly so. Those of us who have witnessed the extreme suffering of a young and delicately constituted primipara can now say that it is a blessing that some means has been found to alleviate her suffering. And I sincerely believe that we have at last found this means in the cocainization of the spinal cord.

That this method is efficacious has been amply demonstrated at the New York Maternity Hospital, where I injected cocaine into the cerebro-spinal canals of thirty-five parturient women, with absolute results in every case. The effects of the injection lasted for one-half hour in the shortest case, and in the longest four and one-half hours. The anesthesia was complete, so that not only was the skin free from painful sensations and the uterine contractions in no way retarded, but the latter occurred without the knowledge of the patients.

The size of the dose is also of interest. With one-sixth of a grain the anesthesia is just as complete as that of one-third of a grain. Should complete anesthesia fail with one-sixth of a grain, another injection of a one-twelfth or one-sixth grain will not fail to bring about the required result in just one-half the time of that of the first injection. Thus, say the first injection requires or fails in six minutes to bring about anesthesia, then when the first one-sixth of a grain shall have

worn off, the second injection will give absolute results within three minutes.

The method I have employed in performing the injection is, I believe, for the most part original. It is as follows: The back of the patient, from the coccyx to the middle of the dorsal vertebræ, is thoroughly scrubbed with tincture of green soap and water, then a saturated solution of potassium permanganate is applied to this region, which is in turn decolorized by a saturated solution of oxalic acid. This is removed by a 1:1000 solution of the bichloride of mercury. Sterile towels are placed over the area thus prepared, so that the injection can be performed when the operator is ready to do so. The best syringe for injecting the cocaine is one of solid metal barrel and piston, which can be thrown into water and sterilized by boiling. A needle about nine centimetres long and of quite fine calibre makes up the rest of the necessary armamentarium. The needle is introduced into the cerebro-spinal canal as follows: The operator locates the sacro-vertebral articulation (which is the posterior landmark in Baudelocque's external pelvic conjugate), and then places the ball of his left thumb upon the spinous process of the first vertebra above, which is the fifth lumbar. This will bring the tip of the thumb on the spinous process of the fourth lumbar. Now introduce the needle just outside the thumb, between the fourth and fifth lumbar vertebræ, at an angle of thirty degrees, from without inward and from below upward. By this means the spinous processes are escaped, and by the slanting direction of the needle one is able to get under the eaving of the lamina of the fourth over the lamina of the fifth. Should one be unable to make out the sacro-vertebral articulation, a line drawn across the back between the highest points of the iliac crest will pass through the body of the fourth lumbar vertebra. To facilitate the introduction of the needle the patient should be in either the bicycle position or in the exaggerated Sims position. By this means the spinous processes of the lumbar vertebræ are made more prominent.

The needle should be slowly introduced until the fluid runs out of it. Often I have found that the fluid did not flow, but in place of it pure blood. In every such case, if the needle were slightly withdrawn, the clear cerebro-spinal liquid came away. The explanation for this is that, in pushing the needle forward, the pia arachnoid goes ahead with the point of the needle, which pierces both the posterior and anterior sides of

the pia, and finally gets into the plexus of veins just anterior to the anterior side of the pia arachnoid and in the bony canal of the spinal column. When the needle is partly withdrawn, its tip escapes into the cerebro-spinal canal and fluid flows through the needle. After injecting the cocaine solution the needle is withdrawn. The wound made by the needle is covered with collodion.

For convenience I have employed an aqueous solution of cocaine hydrochlorate, made so that ten minims equal one-sixth of a grain of the salt. This solution must be prepared just before each operation, and is sterilized by placing it in a test tube, which is put in boiling water for two minutes. This does not destroy the virtue of the drug, but destroys the activity of pathogenic organisms.

In injecting this solution it would seem best, in order that the pressure within the cerebro-spinal canal might not be altered, that as much cerebro-spinal fluid should be permitted to escape as is injected—*i.e.*, if ten minims be injected, ten drops of cerebro-spinal fluid shall have previously come away from the needle.

Most patients will permit the introduction of the cocainizing needle without a local anesthetic. But where this is too painful, I have found that a spray of ethyl chloride will do away with all pain. The injection of cocaine subcutaneously hurts as much if not more than the introduction of the cocainizing needle for the cord.

Of course the cocainization is not without dangers. Many factors must be considered. The possibilities of introduction of pathogenic organisms with the needle are many. Dr. Corning has done this operation in his office very often without any bad results, and it is absolutely impossible for one to have perfect asepsis under such conditions and surroundings. Then, again, there is the personal idiosyncrasy for cocaine that one has to look out for. Already Tuffier has had two cases of sudden death from cocaine poisoning. However, this might be avoided by repeated small doses in large amounts of solution.

Still another objection which might be put forward is the probability of ulterior effect, which might come on weeks or months after, due to injury of some kind to the nerve trunks or cord.

If we should accidentally pierce one of the larger nerve trunks within the spinal canal, I do not think any serious or lasting harm would accrue. I can recall several such cases in my own

personal experience, where this accident evidently occurred and no serious results followed—indeed, no appreciable results at all followed. Hence I think this cannot be counted as an objection to the operation.

Letters received from my earlier cases have been most satisfactory, though as yet it has been but little over three months since I did my first injection. In only one instance did I hear of symptoms that caused me any anxiety. This I found, on visiting the patient, to be an ailment which had bothered her for some time previous to her confinement—namely, a pain in her neck which radiated into the eyeballs.

In view of the many injections that have been done by surgeons throughout the medical world, and the failure of any one to report bad results, I think it safe to say that we can cast aside the possibility of ulterior effects. However, in one case, where the needle was put into the lower dorsal region because the patient had forward curvature and almost complete ankylosis of the lumbar vertebræ, I have seen sensory disturbances which have now lasted two and a half months and appear to be permanent. This was a case of a woman upon whom a hysterectomy was successfully performed with medullary narcosis. The anesthesia was complete, but ever since the operation she has had an area of skin anesthesia upon her right leg corresponding to the distribution of the anterior branch of the fifth lumbar nerve.

The time for giving the injection during labor must now be considered. In one case I was able, by three injections at various intervals apart, to keep up anesthesia for over seven hours and then terminate the labor by means of forceps. But, as a rule, I have waited until the cervix is pretty well thinned out and about four fingers dilated. This, in the average case, is when the pain in the back after the uterine contractions is most unbearable and when chloroform is usually given. From now to the passage of the head over the perineum is usually a space of about two hours in the average primipara. The contractions of the uterus take place in their normal rhythm and the patient is unconscious of them. It takes from two and a half to twelve minutes to produce anesthesia after the injection is performed.

Of course, now that the patient is no longer aware of the uterine contractions, the assistance of the abdominal muscles to expel the fetus is lost. But if during the uterine contractions the patient be told to bear down, she will do so and thus

bring the abdominal muscles into play. Even this causes her no pain.

Here let me add that this would seem to do away with the old idea that the uterine contractions are dependent in some way upon the pain caused by the pressure of the fetus upon the cervix or the tissues lining the pelvic cavity. In multiparæ we know that the force of the uterine contractions is sufficient to expel the fetus, but in primiparæ we were all taught that the abdominal muscles must contract to make possible spontaneous birth of the child. This is absolutely demonstrated by cocaine medullary narcosis. For if a primipara does not "bear down" with her uterine contractions when the head is on the perineum, the oncoming fetal pole is retarded to the degree that the accoucheur is compelled to deliver the woman artificially. Another advantage which results from the loss of sensation in the perineum is that the spasm in the parts is done away with and there is no resistance to the stretching by the fetal pole.

Where labor is permitted to end spontaneously, if the narcosis be complete, the mother will not know that her child is born until she hears its cry or is made aware of the fact. I have questioned these women, and they describe the sensation as one of relief from a heavy weight or as if a cold mass were passing through the parts. Even these sensations are absent in some cases. This is also true of the operative cases. But of this later.

The clinical picture obtained by an injection is about as follows: Given a woman with hard pains occurring every few minutes, twisting and turning upon her bed, or perhaps in a worse condition, groaning and crying out with her pains, then inject the cocaine and you have the following changes: First she may complain of tingling or coldness or cramps in her lower extremities. These sensations gradually die out, and in the meantime, within ten minutes, there comes a sudden nausea with projectile vomiting not unlike that resulting from the use of apomorphine. This is evanescent. Then there is a gradual numbing of the painful sensation to a pin-prick, and still more gradually the loss of knowledge of the uterine contractions. Within the space of less than fifteen minutes the patient lies absolutely at rest, with closed eyes and smiling countenance. There may be, following the vomiting, a profuse sweat, but in the large majority of the cases this is slightly noticeable. Pain is absolutely abolished, while the

mechanism of labor progresses uninterruptedly. Unfortunately, the serenity of this picture is marred in many instances. Your woman has had her baby and is taken to the ward. So far all is well. Then come the most dreaded of all the features of the injection. Within three hours after the birth of the child your patient has a slight headache, which gradually gets worse and worse until it is almost beyond endurance. I have seen one case in which it was so intense, in a neurotic individual, that she attempted to escape from the ward window and jump into the river. At first this sequel was alarming and caused a great deal of anxiety, but by a little experimenting I found that I could control it, if not prevent it. Glonoin in one-fiftieth-grain doses will give much relief, and stop it almost entirely in the majority of cases. This was not altogether satisfactory, and I was forced to employ morphine. Later I tried hyoscine hydrobromate, by which, inasmuch as cocaine stimulates the higher nerve centres and this depresses them, I found I could control most of the after-symptoms by doses of one-one-hundred-and-fiftieth to one-two-hundredth grain. Still later I found that if it were given just before the injection of the cocaine, in a dose of one-two-hundredth grain, even the nausea and vomiting were markedly diminished in percentage of occurrence and that the headache became almost *nil*. Some authorities advocate giving bromides before the injection.

We have yet to consider another and perhaps alarming symptom. After delivery there is a constant rise of temperature. The postpartum temperature may be taken and found to have risen a degree above normal. Three hours later the temperature is again taken and you are surprised to find that your thermometer registers from 101° to 103° F. or more, and you duly worry and wonder at the cause. But by twelve or sixteen hours later the temperature has fallen to normal and remains there. With the rise of temperature one would naturally expect a corresponding rise in the pulse rate, but in this he is disappointed; for the pulse is but little elevated, in spite of the rise of temperature or an accompanying headache. Can we attribute all these symptoms to the cocaine? I believe not, as I have shown by the injection of normal saline, inert cocaine, eucaine, and strychnine. Each of these drugs in solution brought on nausea, vomiting, rise of temperature, and headache of varying degrees. So that I have come to the conclusion that these sequelæ are due to tampering with the

pressure of the cerebro-spinal fluid within the canal, and not, as some claim, to the irritating effects of the cocaine upon the nervous structures or to slight sepsis.

Oftentimes the nausea and vomiting only appear some time after the delivery of the patient, but never to any marked degree if hyoscine be given before the injection of the cocaine.

Here I should like to say a word about the injection of morphine sulphate along with the cocaine. In one case, in which as little as one-twelfth of a grain was injected simultaneously into the subarachnoid space, most decided symptoms of morphine poisoning resulted. The respirations sank to seven per minute and the pupils contracted to pin-point size. It was with difficulty that the patient could be kept awake until the administered antidotes became effective. From this and other similar cases it is reasonable to suppose that there is a more rapid absorption of drugs through the medium of the cerebro-spinal fluid than by other channels of medication. Hence I think it unsafe to give morphine and cocaine in conjunction for injection purposes.

Operative Procedures.—For purposes of experiment I made the majority of my cases operative. Most of the ordinary obstetrical operations were tried, and in every instance there was success of varying degree.

Low forceps were readily done without the slightest pain to the patient, both in multiparæ and primiparæ. In the latter the results are better with than without the employment of anesthesia. So far as perineal tears are concerned, the percentage in my cases was less than five per cent, which is a large gain over the statistical average, in primiparæ, of one in three deliveries. In some cases traction made on the forceps gives slight indefinite pain, due, I believe, to the pulling upon the peritoneal covering of the uterus, which takes part of its nerve supply from the splanchnic, whereby pain stimuli go to the brain through unnarcotized channels. That this is so has been demonstrated in laparatomies where sectioning of the peritoneum causes slight pain.

High forceps can be performed as readily as under general anesthesia.

I have done double application of forceps, delivering the fetal head in partially impacted posterior occiput cases, without the least pain.

In the case of versions the operator's hand does not act with the same freedom of motion as under chloroform, but

certainly there is less resistance than without any anesthesia. I have had four such cases in my experience with this anesthesia, all of which were readily performed. However, with the uterine contractions going on (and the introduction of the operator's hand does not stop them), the operation is not as easily done as in the case of general anesthesia.

Where manual dilatation is indicated and performed, it is surprising with what readiness the cervix almost melts under manipulation.

To my mind there is no obstetrical operation that cannot be performed under this anesthesia. For if hysterectomies and numerous other abdominal operations are possible with it, why not symphyseotomy and Cesarean section? To this objection might be raised on the score that the scene of the operation, and the consciousness of the patient that she is being operated upon, are harrowing and unnecessary. In my experience I have not found this to be true. A patient in the midst of labor does not usually bother her mind with these points, but is anxious only for the birth of the child, that she may be rid of pain. If, however, such a case should arise, to obviate these objections the patient's eyes should be covered and cotton pledgets may be placed in her ears.

Conclusions.—The first thought that will arise in your minds is, "Well, perhaps this is all very well for hospital experimental work, but would you carry out this procedure upon a private case?" To this I would answer that we have passed the stage of experiment, with which Tuffier, Kries, Corning, McLean of Philadelphia, Marx of New York, and all who have had any extensive experience agree.

The only cases of death or bad effects from lumbar puncture have been those of cerebral neoplasms and hydrocephalus, where the too sudden withdrawal of the cerebro-spinal fluid has produced instant death. A recent writer has collected seventeen of such cases from literature.

Is anything gained by medullary narcosis over general anesthesia? There are few of you present who cannot picture in your minds times when the anesthetizer has sat for hours administering chloroform in cases of dystocia. Behold, then, by the aid of an injection of one-sixth of a grain of cocaine into the cerebro-spinal canal, your patient is relieved from pain for hours, and at the same time is conscious of her surroundings, while the accoucheur is relieved from all anxiety and can follow his case without further worry. Where the

surgeon feels it necessary to watch closely the progress of the oncoming fetal pole, examinations can be made from time to time without pain to the patient. Very often, in the unnarcotized case, this is utterly impossible where the vaginal mucosa is at all sensitive.

The presence of an anesthetist and his expense can be dispensed with if cocaine be employed. For, with but little practice, any physician can become competent to perform the lumbar puncture. All the physician has to add to his obstetrical outfit are a metal hypodermatic syringe, a nine-centimetre-long injecting needle, and a freshly made two per cent solution of cocaine. Too much stress cannot be laid upon the important fact that most rigid asepsis must be employed during the puncture, to prevent the possibility of carrying in with the point of the needle any septic material. To obviate the possibility of carrying in the streptococcus epidermidis albus of Welch, Dr. Bodine suggests that a small incision may be made into the skin, through which the injecting needle shall pass on its way to the spinal fluid.

CITY HOSPITAL, BLACKWELL'S ISLAND, 1900.

FATAL CASE OF PUERPERAL FEVER WHICH LED TO A MALPRACTICE SUIT¹

BY

C. S. BACON, M.D.,

Professor of Obstetrics, Chicago Polyclinic, Chicago, Ill.

ALTHOUGH the suit which arose out of this case did not come to trial, yet the questions involved are so interesting and important that the case seems to me to deserve a report. It occurred in the practice of a colleague, Dr. Harms, of this city, who conferred with me in regard to the suit and gave me permission to report the case. The facts, so far as they bear on the malpractice suit, are as follows: The patient, Mrs. J., was engaged by Dr. Harms to attend her in confinement. Two years previously the woman had an attack which was diagnosticated as appendicitis by the attending physician, from which she recovered, but afterward, at times, she had pain in the region of the appendix. When labor began Dr.

¹ Reported to the Chicago Gynecological Society, December 31, 1900.

Harms was called. He visited the patient, and, as labor was not very far advanced, he left to attend some other case, with the understanding that he would return in three or four hours. After he left the patient's pains became more severe. Dr. Harms was again sent for, but, not being able to find him, a midwife was called in. She is said to have made internal examinations, and Dr. Harms found her with her hand in the vagina. Upon the return of Dr. Harms, after cleaning himself, he found that the head was pressing upon the perineum, and delivered the patient in a short time, no internal examination being considered necessary. The perineum was not torn; the afterbirth came away complete within a short time without any interference. There was no hemorrhage, and the patient was apparently in good condition. No douches were given after the labor. The patient progressed favorably for two days; on the third day she had a temperature of $101\frac{1}{4}^{\circ}$. He made no internal examination at this time. Externally there was no special tenderness. He ordered a cathartic, which produced free passage of the bowels, and on the following day—that is, on the fourth day—the patient had no fever, nor did she have any fever on the fifth day. At this time Dr. Harms was taken ill and was in bed for five days. He sent word to the patient that he was ill and unable to attend her. The husband of the patient called at Dr. Harms' house, found him in bed, and reported that his wife was in good condition. He also paid his bill for attending his wife. On the tenth day Dr. Harms was sent for, this being the first day after his recovery when he was able to leave the house. He saw the patient and found she had a temperature of 105° , with tenderness over the abdomen. He gave the patient an intrauterine douche, using a curette with a tube in the handle of the curette, and with this curette he carefully went over the surface of the uterus and found very little débris. The patient, after two or three days, was removed from her home to the Presbyterian Hospital, where, after two or three days more, she died.

A suit was brought some time after, and three charges were made: First, that Dr. Harms was guilty of culpable ignorance and neglect, in that, while he was engaged to attend this case of labor and was expecting to be called at any moment, he attended a case of puerperal septicemia and took charge of that case. Second, that he was guilty of the same ignorance and neglect, in that he failed to properly cleanse himself and the cloths that were used about the patient. Third, that he

was guilty of ignorance and neglect, in that he did not treat the patient properly after the fever developed—namely, he did not curette the uterus.

The first charge alluded to the fact that Dr. Harms had been attending a patient who was said to have puerperal septicemia. This patient, a Mrs. L., was confined one month before the confinement of Mrs. J. She was not attended by Dr. Harms. Her confinement was apparently normal, according to reports, and after a week she was up and about the house. After this period she had abdominal pain and tenderness, and called in Dr. Harms. Dr. Harms diagnosed the case as one of *Unterleibsentzündung*. He made a vaginal examination and found the uterus somewhat large at that time. There was some discharge, and he gave an intrauterine douche. He also gave other general treatment, and had charge of the case at the time of the confinement of Mrs. J. He had not made a vaginal examination in the case of Mrs. L. for two days before he was called to attend Mrs. J.

In his reply to the first charge, Dr. Harms stated that he was not attending a case of puerperal septicemia; that if this case was brought to the attention of the court, he would have said she was suffering from enteritis and that her case was not one of puerperal septicemia.

In reply to the second charge, he would have said that he exercised the usual care that is generally prescribed, and which he himself always followed in cleansing himself, the patient, and all cloths used about her.

In regard to the third charge, he would have said he did all that was proper in washing out the uterus and securing drainage, and that no further curetting was necessary.

The case was on the calendar, but was not brought into court. It was called for last week, but just before the case was brought up it was dismissed by the prosecution, so that any legal decision on this case fails. It would have been a good case to have had decided before a court. It was a case in which the physician was absolutely guiltless. In the first place, it is very doubtful if he could have carried any infection from the patient Mrs. L., particularly as he had made no examination of her for two days; secondly, because his examination of the patient in confinement was such that it is difficult to believe he could have infected her; thirdly, because the great probability was that the infection came from the midwife or from some other source.

The case, however, is interesting because it calls attention to the danger that every one who practises obstetrics is now in, and it would be interesting to see how the questions that are propounded would affect a suit for malpractice. Suppose it could be proved that a physician was in attendance on a case of up-doubted puerperal fever and attended another patient, would it not be rather difficult for him to satisfy a jury that he was guiltless?

The other questions involved would also be interesting for discussion in court.

In conference with the attorneys in this case, and with another physician who was called by Dr. Harms in defence, I find that this other physician, my colleague, in answer to some questions put by the attorney, was able to state positively that he regarded it as good practice to curette the uterus after fever had developed, and that he would regard it as a neglect if that were not done. He was satisfied in this case that the curettement was sufficient. I believe, however, that this is a dangerous position to take. The question of the advisability of curettement of the uterus in puerperal fever is very doubtful, and the avoidance of that should not be brought against a physician in a similar case.

One lesson can be drawn from this case, namely, that it is very important to warn every woman that she do not allow any person to make any internal examinations. If that warning had been given by Dr. Harms in this case, it probably would have prevented the bringing of this suit. If the patient had heeded the warning, and the midwife had not examined her internally, she would have escaped infection and death would not have occurred. If she had not followed the instructions of her physician, and had allowed the examination to be made after the physician had called her attention to the dangers, it at once would have suggested to the friends how the trouble arose, and almost certainly would have prevented the institution of the suit.

CESAREAN SECTION ON A GIRL THIRTEEN YEARS OLD.¹

BY

J. CLARENCE WEBSTER, M.D.,

Professor of Gynecology and Obstetrics, Rush Medical College,
Chicago, Ill.

History of the Case.—Miss M., American, age 13, was admitted to the Maternity Department of the Presbyterian Hospital in December, 1900. The girl appeared to be somewhat stupid, and either would not or could not give satisfactory information regarding her past history. She could not state anything definite regarding the time of conception, quickening or menstrual history, cessation of menstruation.

On examination it was estimated that she was in the eighth month of pregnancy. Fetal movements were distinctly felt, and the presentation at the time of her admission was cephalic, the head being above the brim of the pelvis.

The bony pelvis was found to be considerably contracted, justo-minor in type. The measurements were as follows: Interspinous, 19.5 centimetres; intercrystal, 24 centimetres; external conjugate of Baudelocque, 16 centimetres; diagonal conjugate, 11 centimetres; vertical height of symphysis, 4.5 centimetres; conjugata vera of brim, 9.2 centimetres.

The vagina was small, and two fingers could not be introduced into the orifice without causing pain.

On the morning of December 5 I was hastily summoned to the hospital, being informed that the girl was in labor and that there had been a sudden profuse flow of blood from the vagina. On my arrival the pallor of the patient's face at once attracted my notice. Her pulse was 120 per minute and of low tension. She was bleeding freely from the vagina. Her condition had been discovered only a short time before I was summoned. She was in bed and did not inform the nurse that labor pains had begun. Evidently she had not been much distressed.

I at once proceeded to examine the patient, anesthesia being necessary. The umbilical cord was prolapsed into the vagina, the membranes having been ruptured. The cervix was felt with

¹ Reported to the Chicago Gynecological Society, December 21, 1900.

difficulty and was dilated to about the size of a silver dollar. It was filled with blood clots, which extended upward into the uterine cavity. It was impossible to feel any part of the body of the fetus through the cervix. Examination was difficult, because three fingers only could be passed into the small, resistant vagina. My manipulations brought on such an alarming increase in the hemorrhage that I desisted and decided to pack the cervix and vagina firmly. This was carried out as rapidly as possible.

Cesarean section was then performed. After the abdomen was opened the uterus was raised through the incision. It was firmly retracted upon the fetus, never having relaxed since the beginning of anesthesia. A vertical mesial incision, five inches in length, was made through the fundus and anterior uterine wall. The fetus lay transversely, its head being on the right side, the occiput being markedly bent backward between the shoulders. The body was dorsiflexed, the lower part being twisted so that the legs lay at the left side of the fundus. After its removal the placenta was examined. In its upper three-fourths it was attached to the upper uterine segment posteriorly, the rest being in relation to the lower uterine segment. The latter portion was mostly separated, a large blood clot lying below it. When it was removed the uterus diminished in size, its wall thickening so that the incision, which was originally five inches in length, became about three and a half inches. It was then closed with continuous chromic gut which approximated the entire musculature. The peritoneal edges were inverted and closed with formalin gut. The abdomen was filled with hot saline solution and closed. The patient made a good recovery.

Remarks.—This case presents a number of interesting features. Conception took place while the girl was only 12 years old—a very rare occurrence in this part of the world. The absence of complaint on the part of the patient when labor pains were in progress is somewhat unusual. Indeed, some hours must have elapsed before she made her condition known.

The chief obstetric interest in the case centres around the combination of complications which existed. When I was called to the girl the situation presented itself as follows: The waters had escaped and the fetus lay impacted transversely, the uterus having retracted firmly around it high up in the false pelvis. The patient had lost a considerable quantity of blood and was still flowing. This appeared to be due to sepa-

ration of the placenta accidentally or in association with placenta previa; as the upper uterine segment was firmly retracted on the fetus, the latter appeared to be the probable explanation. The pulse rate had rapidly risen. The hard and soft passages were considerably below the normal adult standard of development, the vagina with difficulty admitting three fingers. The cervix was only partially dilated.

The patient's condition was dangerous and demanded immediate action. It was evident that no manipulations could be carried out per vaginam unless the soft passages were dilated. As the labor was premature, the tissues were not in the state of softness and relaxation which is found at full time. Rapid dilatation could only have been carried out at the risk of producing extensive lacerations. Slow dilatation was out of the question on account of the profuse hemorrhage. Owing to the peculiar attitude and position of the fetus and the very firm retraction of the uterus upon it, turning would have been a very difficult and risky procedure, and it could only have been carried out after dilatation of the cervix and vagina, because it was impossible to touch the fetus in the condition of the soft canal as I found it.

For the same reasons it was considered unwise to attempt removal of the fetus by embryotomy. The increase in hemorrhage brought about by my endeavors to pass my fingers into the uterus made it evident that the patient's life would be endangered by any extended manipulations through the vagina, and led me to the decision to perform Cesarean section. This procedure was carried out with practically no loss of blood from the incisions which were necessary.

The fetus was well developed and had just entered upon the ninth month.

PREGNANCY AND DELIVERY COMPLICATED WITH TUMORS AND NEOPLASMS OF THE GENITAL ORGANS.

BY

HENRY J. KREUTZMANN, M.D.,
San Francisco, Cal.

PROF. W. A. FREUND has recently compared modern medical statistics with a "puella publica." We must concede statistics have been abused *usque ad nauseam* that so hard an expression appears justified. But we will not condemn sta-

tistics because figures have been manipulated unscrupulously for selfish purposes. The science of statistics is as true and pure as science can be, and statistical compilations are a most valuable and absolutely necessary instrument for reaching conclusions in medicine.

A few things are badly needed, however, to render statistics in medicine more reliable and serviceable than they are at present. Most important among these is to abandon the habit, too largely adhered to yet, of publishing successful and favorable cases only. Small numbers of observations should never be made the basis for conclusions. Furthermore, collective investigations should be instigated more frequently; the large body of physicians throughout the country, with their enormous material, should take a more active part in solving many a question by putting on record their observations.

It is just this intention of furnishing some material that has prompted me to put together the following cases, covering the period of 1890-1900 of my work. Some of the cases have already been published before. The observations are simply put on record, without any statistical deductions and without analyzing the many interesting details.

A. Complications with Ovarian Tumors.—CASES I. and II., published in THE AMERICAN JOURNAL OF OBSTETRICS, vol. xxvi., No. 2, 1892, "Ovariectomy during Pregnancy." In both instances ovariectomy was done early, without interfering with the progress of pregnancy. By a peculiar coincidence of events the women (multiparæ) were delivered so rapidly that the birth took place before the arrival of the accoucheur. Torsion of the pedicle was observed in the second case. In both the abdominal wound was sutured with through-and-through silk sutures; its healing took place without any interruption. A perfect result *quoad* permanent union was obtained. The line of incision had been very dark-brown during pregnancy, and remained so for several months after delivery, but finally it took the usual white color.

CASE III.—This case has also been published *in extenso* in THE AMERICAN JOURNAL OF OBSTETRICS, vol. xxxvii., No. 6, 1898, under the title of "Cystic Degeneration of the Chorion Villi with Coincident Cystic Tumor of Both Ovaries." Operation on May 23, 1896, at the German Hospital. After the uterus was emptied under chloroform the abdomen was opened and double-sided ovarian cystomata were removed.

The woman recovered without any trouble and has been in good health ever since.

CASE IV.—Primipara; married one year; last menses in the middle of June, 1897. Patient did not experience any distinct symptoms of pregnancy; felt some malaise and headache, which was attributed to her sojourn in a high altitude at that time. At the time when the next menstruation was due there occurred a slight bloody discharge. Soon afterward (August 12), without any warning, she was taken with most violent pains while in bed. Two more such attacks, slightly less severe, were observed the next day. The examination which I made in the afternoon was somewhat incomplete, on account of the great sensitiveness of the patient, but there was felt on the left side of the uterus a boggy mass which was extremely sensitive to touch. From the history of the case and from the findings the existence of a ruptured extrauterine pregnancy had to be taken into consideration. This view was shared by Dr. B. McMonagle, who saw the case in consultation. The patient's general condition was good; there were no more attacks of pain. Treatment: ice, and perfect rest in bed. After some days, when examination could well be made, I found (August 19) that we had to deal with a pregnant uterus and an ovarian tumor on the left side; the tumor was then the size of a small fist. This status was verified by an examination under chloroform August 27. The operation for removal of the tumor was done through a median incision on September 11, 1897, at the patient's house. The pedicle of the ovarian cyst was twisted several times. At the base of the multilocular tumor was found an extravasation of blood into the walls of the cyst. It is apparent that the seizures of pain from which the patient suffered were due to the torsion of the pedicle. Removal of the tumor was done by ligating singly the arteries; the peritoneum was carefully closed over the slit in the broad ligament. The uterus was found enlarged to a two-months pregnancy. The other ovary was healthy. The abdomen was closed with three rows of sutures, running catgut for the peritoneum, interrupted catgut for the muscle and fascia, and a number of silk sutures for the skin. Recovery after the operation was perfectly uninterrupted. In January, 1898, albumin in the urine was found for the first time, and casts soon appeared. At the same time swelling of the feet and hands was noticed to a slight degree, which soon became very marked. The patient underwent treatment for this

without much effect. Urine was secreted in fair quantities, and the secretion of urea appeared in normal limits. Patient began to complain about most severe headache in the latter part of February; an increasing amount of albumin, also of casts in the urine, was observed. On March 9, while in the patient's house consulting with another physician (Dr. Henry Gibbons) about the advisability of interrupting pregnancy, patient was taken with convulsions (8 A.M.). She had noticed prior to this attack, during the night, slight contractions in the abdomen. She was immediately put under chloroform, and on examination we found that labor was beginning. She was then kept under chloroform all day; no more convulsions occurred. Labor progressed steadily, os dilated in due time, water bag ruptured, head presented itself in L. O. A. position, and, to expedite matters, at 5 P.M., when the head was presenting in the vulva, forceps were applied and a child (female) easily extracted. Afterbirth followed, with good contraction of the womb. The baby was very small, weighing a trifle more than four pounds, premature, but with good care it was kept alive and thrived. Inhalation of chloroform ceased with delivery of secundines. Half an hour after delivery puerpera was taken with another quite severe attack of convulsions, but from this time on no more convulsions occurred. Patient had complained slightly about her eyesight before confinement, and when recovered from the anesthetic was perfectly blind. This lasted a few days and gradually passed away. For some time there remained slight blurring of the left eyesight, and ophthalmoscopic examinations repeatedly made (Dr. Dennis Arnold) showed a slight hemorrhage in the retina; but the absorption of the extravasation of blood has been complete, and the patient has perfect eyesight now. The recovery of this patient from her nephritis was rather in contrast with observations that I have made before and since, and also in contrast with the experiences laid down in the text books about the disappearance of casts and albumin from the urine of eclamptics. There was a steady decrease in the amount of albumin, as measured by Esbach's method, simultaneously in that of casts. The swelling of feet and hands disappeared gradually. The patient enjoyed good health, but it took nearly a whole year before the albumin and casts had entirely disappeared from the urine. Since that time urine has been frequently examined and found to be normal.

CASE V.—Primipara; married; nativity, Holland. Seen

early in the year 1898. Complained about backache; uterus in movable retroflexion. She was treated for her ailments off and on, and while under observation the patient became pregnant, as well as the possessor of a tumor of the right ovary which grew rapidly to the size of a fist. Ovariectomy was proposed and performed at the German Hospital on May 24, 1898. I operated through a median incision, mostly because I wanted to attend to the pedicle by ligating the vessels individually with smallest catgut and by covering the wound in the broad ligament with peritoneum. I have adopted this *modus operandi* for all ovariectomies, and it seems to me of especial importance to thus proceed during pregnancy, in order to avoid puckering of the broad ligament and traction upon the pregnant, growing uterus. The patient made an uneventful recovery. The tumor was a unilocular ovarian cyst. Patient moved to Honolulu and was delivered (December 27, 1898) of a boy in normal labor (Dr. F. F. Miner).

CASE VI.—Diagnosis: multilocular ovarian cystoma of large size, and pregnancy of four months.

Operation in German Hospital December 15, 1898. Ether; incision in median line, coming over the mark of a previous "tapping" done outside the hospital; around the scar of that "tapping" the tumor is adherent to the abdominal wall; the peritoneal cavity is entered near the umbilicus. Quite extensive adhesions are found between the tumor and the abdominal wall. They are of a more recent nature, not firm, easily separated; the tumor becomes then well exposed; on its surface the color is bluish-gray. Below it, reaching over the symphysis, as broad as the hand and entirely different-looking, another round "tumor" is seen, the serous covering of which is rosy in color. By careful examination it is found that this latter "tumor" is the pregnant uterus. The ligamenta rotunda are quite enlarged, with big veins running down the side of the uterus. Emanating from the left broad ligament, just below the left round ligament, a contorted bluish mass is seen, which at first glance resembles intestines, but closer inspection and careful examination reveals it to be the pedicle of the cystic tumor. It is edematous and as thick as three fingers laid parallel. There are a number of torsions present in the pedicle, which are from left to right, from inside to outside. There is a little serous liquid in the groin. Further examination shows that the tumor reaches away up to the left side of the abdomen and is adherent broadly. About a quart of its

contents is withdrawn; it is slimy, of a chocolate-brown color, and flows very slowly. Owing to the impossibility of getting at the adhesions from below, the pedicle is then first separated; two clamps are applied around the pedicle, one close to the broad ligament, the other at a little distance from the first; the tissue is cut between these clamps. The tumor is now lifted out of the pelvic cavity with the aid of the clamp attached to its pedicle. In this manner, the reverse of the usual, the tumor is brought out before the abdominal wall, while the adhesions become separated. Adherent to the tumor are omentum and colon transversum. The omentum and colon are easily stripped off the tumor, but both, and especially the gut, bleed rather profusely. Towels wrung out in hot water are applied. The bleeding points of the omentum are stitched over with mattress stitch, catgut. Two bleeding points of the colon are also transfixed with catgut, simple stitch, and this, with the assistance of hot cloths, stops the bleeding entirely.

Close inspection of the bowel shows it very much congested, but no tear is perceptible. The bleeding of the bowel had been entirely venous; there had developed at the seat of the adhesions some new veins, which were torn open during separation and which bled rather profusely. There was considerable blood in the abdominal cavity, which was removed by dry sponging. The arteries of the pedicle, the cut surface of which could be distinctly seen, were caught with artery forceps and ligated with catgut, the clamp released. Some venous bleeding required a mattress stitch, catgut. With continuous catgut suture the serous surface of the pedicle was brought into apposition. The other ovary was examined and found to be perfectly normal. The uterus was about as large as a four-months pregnant uterus. Great care was taken in sewing up the abdominal incision; the peritoneum was closed with continuous catgut suture; the muscle and fascia were brought into apposition with a number of interrupted catgut sutures, and the skin was united with silk, interrupted. Patient bore the anesthetic very well and left the operating table in good condition.

As far as the operation was concerned, the patient made an excellent recovery; but on the third day after the operation some bloody discharge was seen from the vagina, and the next day the ovum was expelled, everything coming away spontaneously, with good labor pains; no hemorrhage. Involution of the uterus was undisturbed.

B. Complications with Fibroids of the Uterus.—Occasional observation of a fibroid of the uterus during gestation, more especially so after confinement, is not by any means a rare occurrence. I have seen several such harmless tumors that were in no way to be considered as complications. Only two women have come under my observation where the presence of fibromyoma was of any consequence.

CASE I.—This case has been reported in "Festschrift zum 25. jährigen Jubiläum des Vereins Deutscher Aerzte zu San Francisco," 1894, under the title of "Schwangerschaft und Geburt bei Fibromyoma Uteri." In the summer of 1891 I examined this patient, 48 (?) years of age, nullipara, and found her to have a fibromyoma the size of a hen's egg embedded broadly in the wall of the uterus on its dorsum and slightly to the right, simulating retroflexion. In 1892, early in the summer, the patient returned; last menses two months before; abdomen greatly distended. Patient complained about severe pains in the abdomen; did not experience any signs of pregnancy. The distension of the abdomen was due to two tumors filling out the abdomen; the larger one, on the right side, was reaching up to the ribs and over the median line to the left side; the other, on the left side, was coming in contact with the right-sided tumor and was extending down into the pelvic cavity. Vaginal portion elevated; the body of the uterus could not be mapped out. Several months afterward the patient was seen again; tumors about the same size, but pushed more to the sides, so that the fundus of the uterus could be felt; fetal heart beats were now heard.

At the same time it was noticed that the smaller tumor had retracted itself somewhat from the inside of the pelvis. It was decided to wait for the full term, notwithstanding the patient was suffering considerable pain and the abdomen was enormously distended. Confinement took place in private house January 16, 1893; the tumor on the left side had been lifted entirely out of the pelvis by this time; labor was normal; baby born in L. O. A. position, with the cord around the neck. The delivery of the afterbirth presented some difficulty; being unable to remove it with Credé's method, when one and one-half hours had passed I introduced the hand into the vagina and found the placenta partly in the vagina, partly wedged in the cervix; it was delivered manually without any difficulty. The puerperium was normal until on the twelfth day after delivery a severe hemorrhage occurred from the uterus; it was found that the uterus was still very large, that

the tumor on the left side had descended again into the pelvis, and that both tumors were not reduced in size yet. Recovery was then uninterrupted. Several months afterward the patient was seen in the office; it was found that the womb was small, that the tumor on the right could be easily detected, but that there was absolutely no trace of any fibroma on the left side of the uterus.

The same woman about two years later became pregnant again. When first seen by me she had progressed in pregnancy as far as the sixth month. Abdomen enormously distended; it appeared, though, as if the tumors were not quite as large as before, especially the one on the left side. Confinement in private house took place October 17, 1895; the baby was delivered without any difficulty, under good strong labor pains. After waiting nearly two hours, being unable to deliver the afterbirth with combined Credé's method and pressure from the mother, the hand was introduced into the vagina and the placenta was found again in the vagina, partly wedged in the cervix; with gentle traction on the cord it was delivered. Immediately after the delivery of the placenta a most terrific hemorrhage occurred; in a very short time the woman had lost an enormous amount of blood and was at death's door; intrauterine tamponade, however, saved her life. She made a good recovery; the uterus underwent regular involution. She was seen about a year afterward; the uterus was found very small; scarcely any trace of any fibroid could be detected then.

CASE II.—Patient was first seen in September, 1897, at the German Hospital; pregnancy of fourth or fifth month was discovered; besides there were present two fibroids of the uterus the size of a cocoanut each. When patient entered the German Hospital she was bleeding from her genitals, with evidence of beginning miscarriage, which occurred spontaneously and completely on the second day after entrance. In December, 1898, the patient again was seen at the German Hospital; she was progressed in pregnancy about two months; was suffering much sickness at her stomach, not only in the morning but all day; no complaint was made about pain in the abdomen. It was found that the uterus was enlarged corresponding to the second month of pregnancy; on the right side of the uterus a fibromyoma the size of a fist was felt, movable, outside the pelvis. On the left side of the uterus, at the height of the inner os, another such tumor was found, smaller; this one was embedded broadly in the uterine tissue and partly located in the pelvis. The removal of the tumor on the right

side would have been easy, it would certainly have been possible to extirpate it without interrupting pregnancy, but the connection of the other fibromyoma with the uterine wall was such that it appeared most certain that its enucleation would be followed by abortion; for this reason the operation for removal of the tumors was not favored, and the patient was so informed, notwithstanding she had come to the city to have the tumors removed upon the advice of a physician in the country. During my observation in the next few days, bleeding began and the patient miscarried, and it became necessary to curette the uterus in order to remove the after-birth. Patient recovered without any interruption, the uterus undergoing good involution.

In April, 1899, the patient was seen again at my office. She was most anxious to have a child, and, thinking the presence of the tumors responsible for the miscarriages, she wanted the tumors removed. Patient was in perfect health; no pain; no complaint whatsoever; general appearance excellent; fibroid of the right side, subserous, as large as a hen's egg; smaller tumor broadly embedded in the left side of the uterus. Considering the excellent health of the patient, furthermore the nature of the connection of the one tumor with the uterus, I advised against an operation, since I could not possibly guarantee the removal of the tumor without hysterectomy.

C. Complications with Carcinoma Uteri.—A short account of the following two cases was given before the California Academy of Medicine, and was printed in the *Pacific Record of Medicine and Surgery*, February 15, 1899, p. 234.

CASE I.—Multipara, about 36 years of age. Uterus reaching to the umbilicus; baby alive; vaginal portion enormously thickened, filling out the pelvis, nodulated and bleeding readily. It was impossible to ascertain the condition of the parametria.

Diagnosis of carcinoma uteri had already been made by the attending physician. In this case I thought the proper treatment would be to wait for the full term and then deliver, if necessary by Cesarean section. It appeared to me more correct to save the life of the baby, since that of the mother was surely doomed. The physician in attendance, however, had a more hopeful view for the mother; he had seen her before, and in his opinion the neoplasm was of short duration, and he considered that rapid progress had been made during pregnancy; thinking that this rapidity of development would continue, he urged me to operate. After some discussion and

further consultation, the operation was decided upon, and on November 21, 1892, at private house, the operation was performed. It proved to be a most difficult one because the parametria were greatly infiltrated, and the ligation of that soft, extremely congested tissue was associated with great obstacles. The veins were enormously distended; repeatedly the ligatures cut clear through; the operation was much delayed on that account. The bladder, besides, was accidentally punctured by an assistant with a catheter in trying to locate the borders of the bladder, the walls of which had been invaded by the neoplasm; the repair of this accident again caused some delay. It became necessary to put a clamp on the right side on the parametria in order to be enabled to finish the operation, and the uterus was then removed *in toto*. The patient died in collapse about forty-eight hours after the operation. A piece of affected uterine tissue was examined by Dr. D. W. Montgomery and pronounced cancer of the uterus, colloid type.

CASE II.—Patient 28 years of age entered the German Hospital at the end of August, 1898. Multipara; pregnant between fifth and sixth months; baby alive; patient in poor general condition. A carcinomatous infiltration in the cervix exists, verified by microscopical examinations (Dr. Lois Nelson); the cervix is swollen, soft, ulcerated, bleeds easily on touch. The general condition of the patient was such that I did not feel encouraged to do anything at that time; I decided to wait for further developments. The patient went home and was under the care of one of my polyclinic assistants, Dr. Mary Campbell. She was most of the time in bed; suffered considerable pain; had frequent hemorrhages, which required tamponade. In the first days of October the cervix became somewhat dilated, the head descended and was pressing on the cervix. On October 23 I saw the patient again at her house; the membranes had ruptured during the previous night, and she had had several convulsions in the night and through the day; she was just recovering from a deep eclamptic attack when I reached the bedside. Bladder was much distended; uterus reaching above umbilicus; fetal heart beats could not be heard. It was reported that no motion of the child had been felt by the mother for two days. The os was open to the size of a silver dollar. A carcinomatous mass was felt protruding into the os from the right side, which reached higher up into the cervix. The head was presenting, pressing into the os, with a well-defined caput succedaneum; the head was only slightly movable; there was some discharge of blood. Urine was withdrawn,

which upon examination showed only a trace of albumin. Patient was transported to the City and County Hospital and was seen again at 9 P.M. There had been considerable hemorrhage during transportation to the hospital. Patient was prepared for operation. The only course that seemed advisable was to remove the fetus as quickly as possible from the mother, without any consideration for the fetal life, since, upon careful examination, the baby's death was certain. An unsuccessful effort was made to apply the cephalotribe; then the tubal perforatorium was used, the cranioclast applied, and the head slowly delivered; the delivery of the shoulders made some difficulty; the placenta was removed by Credé's method immediately; there was no hemorrhage of any amount; the cavity of the uterus and vagina were packed with iodoform gauze as a precautionary measure. No chloroform had been used since the patient had been in a deep eclamptic stupor. Strange to say, the patient lived for nearly six days; there were a few more eclamptic seizures, but she never regained a perfectly conscious condition. Great efforts were made to save her life; salt solutions under the skin were made, etc. She took liquid nourishment and water, but all our efforts were futile and the patient died. A partial autopsy was made; Dr. Nelson reported upon the findings of the uterus and adnexa as follows: "Sections of cervix show diffuse infiltration of carcinomatous cells among the muscular tissue, and round-cell infiltration in vicinity of ulcer. The malignant process is not found as high as the opening of the Fallopian tube; seems confined to the cervix and lower part of the body of the uterus."

THE NEW FORMATION OF THE FEMALE URETHRA;

WITH REPORT OF A CASE.¹

BY

CHARLES P. NOBLE, M.D.,

Surgeon-in-Chief, Kensington Hospital for Women, Philadelphia.

(With Illustration.)

THE entire destruction of the female urethra is of rare occurrence. But few such cases have been reported in the literature.

¹ Read before the College of Physicians of Philadelphia, December 5, 1900.

For this reason, only a few surgeons have had the opportunity of operating for the cure of this condition. Dr. Emmet has had a larger experience in dealing with such cases than any other operator. He states¹ that he has succeeded in restoring the whole urethra by plastic surgery in six or seven cases, and only partially so in others. I have heard him make the statement that all of these cases were ultimately failures from one reason or another, and that it is not his intention to attempt the operation again. In his work, "Vesico-vaginal Fistula," 1868, pages 179, 180, and 191, is a detailed account of several cases and of the difficulties met with and the numerous operations required to make a new urethra. Olshausen² reports three cases in which he has performed the operation to restore the urethra. In two of the cases he was successful, but the third was a failure.

Baker Brown reports three cases. The first case³ was one of obliteration of the urethra and a vesico-vaginal fistula. The fistula was closed and a new urethra was formed. Good union was obtained, but it was necessary for the patient to use a catheter to empty the bladder.

The second case had a vesico-vaginal fistula as large as a shilling. The urethra and neck of the bladder had sloughed away. From the description of the case it was evidently a very bad one, being complicated by a recto-vaginal fistula. A new urethra was made with a trocar. He succeeded in closing the fistula and obtained perfect continence of urine.⁴

The third case was one in which the urethra and neck of the bladder were entirely destroyed. This was closed by the direct operation. At first good union was obtained, but later the result was a failure. At a second operation he succeeded in effecting a cure.⁵

The following case has come under my own observation, and I report it as an encouragement to others to attempt the cure of similar injuries. As I operated twice upon this patient without permanent success, and by a third operation succeeded in curing her, I wish to emphasize the cause of failure by the first technique employed and to recommend that which proved successful. This case was reported before the Section

¹ "Principles and Practice of Gynecology," 1884, p. 840.

² "Ueber Urethroplastik," *Zeit. f. Geburts. und Gynäkol.*, Band xxxii., Heft. 8.

³ *British Medical Journal*, 1863, vol. ii., p. 390.

⁴ *Lancet*, June 20, 1863, p. 689.

⁵ *British Medical Journal*, 1863, vol. ii., p. 391.

on Gynecology of the College, December 16, 1897. The history of the case and the technique of the primary operation I quote from the original report of the case:

Mrs. S., age 52 years, white, American, the mother of three children, had had good health until 1896. Nothing in her history bears upon the subject of this report. At the age of 49 she noticed, especially when tired, a throbbing referred to the rectum. On account of the continuance of this symptom, in March, 1896, she consulted a physician in Reading, Pa., who stated that an immediate operation was required to prevent invalidism. The operation was performed, and was followed by some leakage of urine, which became profuse on the removal of the stitches on the eighteenth day. The primary operation was said to be for the removal of a "blue spot" on the anterior vaginal wall. In the attempt to repair the opening in the bladder the doctor operated seven times. Four of the operations were performed without general anesthesia. From the patient's statement it is apparent that various suture materials were employed in the different operations, including harelip pins; after some of them a drainage catheter was used, and after others it was not employed. All the operations failed. At this time a mass projected through the fistulous opening, which she was told was a polyp, and it was proposed to remove this. She then consulted her family physician, who told her that the supposed polyp was the prolapsed wall of the bladder. This resulted in the discharge of the doctor who had made the fistula; and, upon the advice of her family physician, a well-known gynecologist of this city was called in, who operated upon her twice in Reading and twice in a hospital in this city. Union was not secured.

Mrs. S. consulted me November 16, 1897, and on examination I found that the entire interior wall of the urethra was gone and that a fistula existed involving the neck of the bladder. The situation of the urethra was marked by a strip of mucous membrane continuous above with the vesical wall. The opening into the bladder was large enough to admit the index finger. The edges of the fistula were cicatricial, and upon each side of the urethra extensive cicatrices were present, probably the result of incisions made at the various operations to relieve tension on the sutures. After some of the operations there must have been considerable destruction of tissue, as a large amount of cicatricial tissue was present.

The mental condition of the patient was very bad, being

due, doubtless, to the failure of the eleven operations to effect a cure and to the constant annoyance of the discharge of urine. November 20 I operated upon her at the Kensington Hospital for Women. As a preliminary I procured a Sims sigmoid metallic catheter whose diameter was one-third that of the usual catheter. The operation was performed as follows:

An incision was made along the edge of what corresponded to the original mucous membrane of the urethra from the meatus to the bladder. External to this line of incision a raw surface was made upon each side of sufficient breadth to make a firm urethral wall. The edges of the fistula into the bladder were then denuded, an effort being made in the denudation to secure as small a neck to the bladder as possible. Deep incisions were then made, parallel to the long axis of the vagina, upon each side of the proposed urethra, to secure flaps out of which to form the new urethra. On the left side it was necessary to detach the soft parts entirely from the pubic bone in order to overcome tension.

The sutures were introduced in the following manner: The small catheter was introduced and held in position; over this was sutured, with a running suture of No. 1 cumol catgut, the mucous membrane of the bladder and that of the new urethra; interrupted silver-wire sutures were then introduced to close the opening into the bladder and to form a new urethra. An effort was made to pass the sutures at the neck of the bladder in such a way as to catch, if possible, the muscular fibres which form the sphincter vesicæ. The silver-wire sutures were then tightened and twisted, closing the fistula in the bladder and building up a new urethral wall. To reinforce this line of sutures, and to secure an even better approximation, a silkworm-gut suture was placed between each of the silver-wire sutures. Sutures were then passed in the direction of the axis of the vagina, to close in part the incisions made at each side of the restored urethra, and more especially, by approximating the ends of these incisions, to still further guard against tension on the restored urethra. The deep incision on the left side was then packed with gauze. The operation lasted about one hour and a quarter.

The next problem was to secure healing, and I determined to leave the catheter *in situ* until the newly formed urethra had firmly united. After two days the catheter became blocked by a deposit of urinary salts, after which time the

bladder was washed out daily with boracic acid solution to overcome this difficulty. The catheter remained *in situ* until the twelfth day, after which it was removed daily for cleansing. The line of union healed by first intention throughout, although the tissue which made up the left side of the restored urethra was cicatricial in character and its vaginal aspect was bare of mucous membrane. Three weeks after the operation the deep incisions had filled up by granulation and only a small area remained for cicatrization.

The patient is able to retain her urine for from three to five hours, after which time she has not perfect control over the bladder and is apt to discharge a small quantity of urine if the bladder is not promptly evacuated.

I would like especially to call attention to two points in the technique of the operation, as I believe a successful result was dependent upon them. The first was the use of a very small catheter, which was left in position until primary union had been secured. I felt, and still feel, certain that an attempt to pass a catheter through a somewhat distorted canal daily or more frequently would result in the perforation of the canal and failure of the operation. The second point was the method used in suturing. By first restoring the mucous lining of the canal with a continuous catgut suture, it was possible to insure a narrow urethra of uniform diameter, and in the subsequent restoration of the wall of the urethra it was possible to disregard the urethral canal and to consider merely the building up of a firm urethral wall. It was possible also to study the problem of tension more carefully. It was found necessary to make a very extensive detachment of the soft parts from the pubic arch, in order to secure a flap of tissue without tension.

April 16, 1898, the following letter was published in *THE AMERICAN JOURNAL OF OBSTETRICS* (p. 622):

"DEAR SIR:—I desire to add the subsequent history of the case of operation for the restoration of the urethra and for the closure of a vesico-vaginal fistula involving the neck of the bladder, which was reported in the March number of *THE AMERICAN JOURNAL OF OBSTETRICS*.

"This patient returned home apparently soundly healed and was able to retain urine for four hours. Shortly after her return home she wrote me that her urine was escaping constantly, and again consulted me for examination. A small fistula was found just at the internal orifice of the urethra.

This undoubtedly was produced by lateral traction on the restored urethra. This traction was brought about by the healing of the lateral incisions which were made to relax tension at the time of the operation. This experience further illustrates the intractable nature of such cases. It adds another to the cases reported by Emmet, in which the line of union gave way some time after apparent cure. It is my purpose to attempt the restoration of the urethra by the formation of flaps, and I hope to report the results thus secured.

"Very respectfully yours, etc."

The fistula which formed at the internal orifice of the urethra was so small that I felt it was worth while to attempt its closure without disturbing that portion of the operation which had remained healed. On January 10, 1898, the edges of the fistula were freshened, deep lateral incisions parallel to the course of the urethra were made to separate the tissues from the pubic arch, so as to relieve tension from the line of union, and the fistula was closed. This operation was an entire failure. Not only did the fistula fail to close, but much of the urethra which had been united at the time of the operation broke down.

It was plainly evident that the cause of failure was the tension upon the line of union, and I determined to abandon the direct method of operation and to resort to the formation of a flap. The parts were permitted to heal soundly, and the general condition of the patient was improved by suitable treatment, and on June 15, 1898, I operated for the third time, making the fourteenth operation which the patient had undergone. The following points were determined upon in the performance of this operation:

1. To elongate the urethra so that the orifice of the new urethra should be at the clitoris instead of at its normal site. This was determined upon to increase the retentive power of the bladder lost by the destruction of the sphincter vesicæ.

2. The first step in the operation consisted in suturing the mucous membrane over the small sigmoid self-retaining catheter before mentioned (as in my first operation), to constitute the lining membrane of the new urethra. What was left of the anterior wall of the original urethra was employed, and between the external orifice of the urethra and the clitoris the mucous membrane of the vestibule was utilized. Two parallel longitudinal incisions were made and the mucous mem-

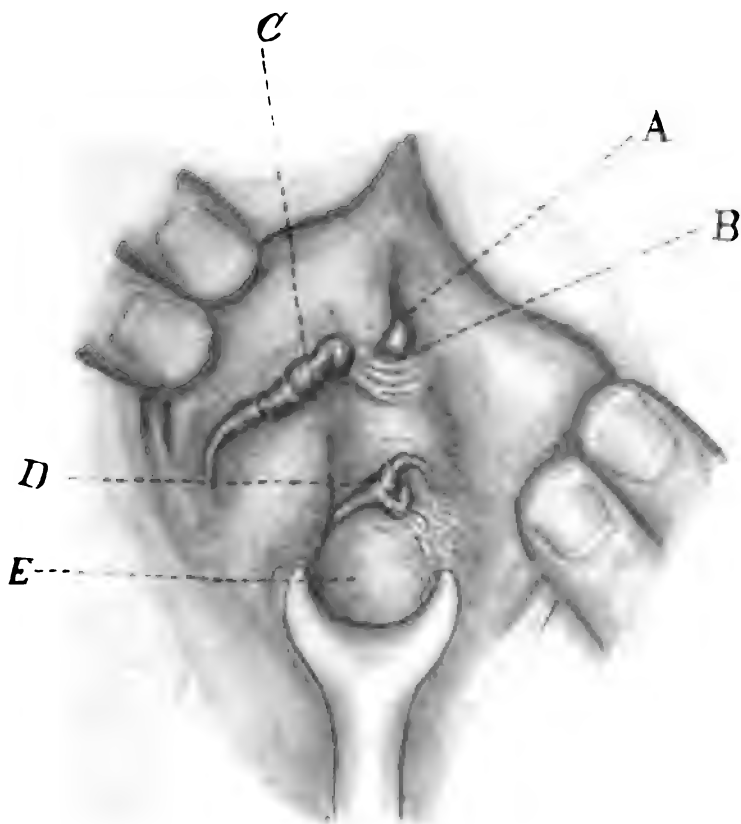
brane sufficiently loosened to enable me to suture it over the catheter with a continuous catgut suture, thus forming the mucous lining of the new urethra. The raw surface over the site of the urethra was broadened by splitting and by denudation, especially in the neighborhood of the neck of the bladder, in order to secure a broad raw surface upon which to unite the flap.

3. The left labium minus was selected as the tissue from which to form the flap. This was detached from the subjacent structures quite easily (the incision beginning at the left border of the urethra), as it proved quite simple, with traction and slight dissection, to unfold it. The tissue of the labium minus and of the adjacent labium majus is so elastic that it was quite easy to draw it over the raw surface and well back into the vagina. Numerous interrupted catgut sutures were used to attach the labium minus to the raw surface which had been prepared, and the edges of the labium minus were sutured with silkworm-gut sutures to the right border of the raw surface along the urethra and within the vagina. At the anterior end of the new urethra, near the clitoris, the lateral surfaces of the labia minora were sutured together. In this way not only was the floor of the urethra made of the tissue of the left labium minus, but also a flap of considerable thickness was secured over the region of the neck of the bladder. This was done not only in the hope of effecting a cure of the condition without further operation, but also with the purpose that in case a fistula appeared at any point to prepare the way for its closure by furnishing sound tissue upon which to operate.

The after-treatment was similar to that employed in the first operation. The result was all that could have been hoped for. Firm union was obtained. With the aid of a small tampon, introduced just within the vagina to make pressure upon the internal orifice of the urethra and to elevate slightly the base of the bladder, the patient was enabled to retain her urine for a number of hours during the day and to sleep soundly during the night. At this date the result is equally satisfactory. She introduces herself a small tampon daily, and with this assistance can retain her urine for hours at a time during the day and also during the night. She is thus enabled to perform her household duties in comfort and to take her place in society.

I wish to commend strongly to others who may be obliged to operate for this condition or a similar one the plan of utiliz-

ing the labium minus as a flap from which to secure sound tissue. Owing to the extreme elasticity of the labium minus and the labium majus, they can be employed not only to supply the floor for a new urethra, but also to supply tissue for the closure of extensive fistulæ involving the base of the bladder. So far as I know, the utilization of a labium minus as a flap to form a new urethra is original with myself.



A, clitoris; *B*, artificial urethral orifice; *C*, right labium minus; *D*, left labium minus transplanted; *E*, anterior vaginal wall.

The accompanying drawing illustrates very well the method of employing the labium minus as a flap, and also the present condition of the parts.

The experience of Emmet and the results of the six operations upon this patient—two by myself and four by another trained operator—are a sufficient basis to advise against per-

sistence in the ordinary direct method of operation, if this fails more than once or twice. Experience has shown so clearly that the cause of failure is the cicatrization following the healing of incisions made to relieve tension that there can be no doubt upon this point; hence, whenever it is necessary to employ deep and extensive incisions to relieve tension in order to secure flaps for the direct operation, it is better not to attempt the direct method, but to utilize the tissue of the labium minus as a flap.

A DEVICE FOR THE RELIEF OF BLADDER SPASM IN THE
TREATMENT OF CYSTITIS AND BLADDER IRRITATION.

BY

GEORGE H. NOBLE, M.D.,
Atlanta, Ga.

(With four illustrations.)

THE bladder is excited to contraction by stimulation and irritation of the circular muscles at the neck or near the trigonum. It is a common observation that it displays tolerance of foreign bodies in other parts to a marked degree, and that slight dilatation with the finger or sound often gives relief in vesical tenesmus; so it occurred to me that thorough stretching or temporarily paralyzing the sphincter muscles of the bladder and urethra would inhibit the spasm in the same way it relieves the sphincter ani muscle. The objection to dilatation in the past was based upon injury to the meatus and urethra by the sound or finger or other instruments used. This was unavoidable, because an instrument large enough to produce requisite distension is too large to pass through the meatus without producing a traumatism to a greater or less degree. To overcome this I first employed small rubber bags fastened to vulcanized tubes, which were introduced through an ordinary cystoscope. Withdrawal of the latter would leave the dilator in position.

Attached to the end of the tube was an air bulb, such as is used with the Paquelin cautery, for the purpose of dilating the bag in the neck of the bladder. Careful observation can be made through the vaginal speculum, and the distension and

position of the dilator can be accurately determined by feeling with the finger the prominence it produces in the vagina. While they worked satisfactorily, it was a little awkward to apply them; I therefore devised the instrument here presented to facilitate this work.

Fig. 1 represents the instrument closed and ready for introduction. It is made to work through a Kelly cystoscope No. 10, and can be used as such. Fig. 2 represents the obturator, which is made on a hollow stem and has a sliding handle fixed with a thumbscrew. Near the distal extremity there

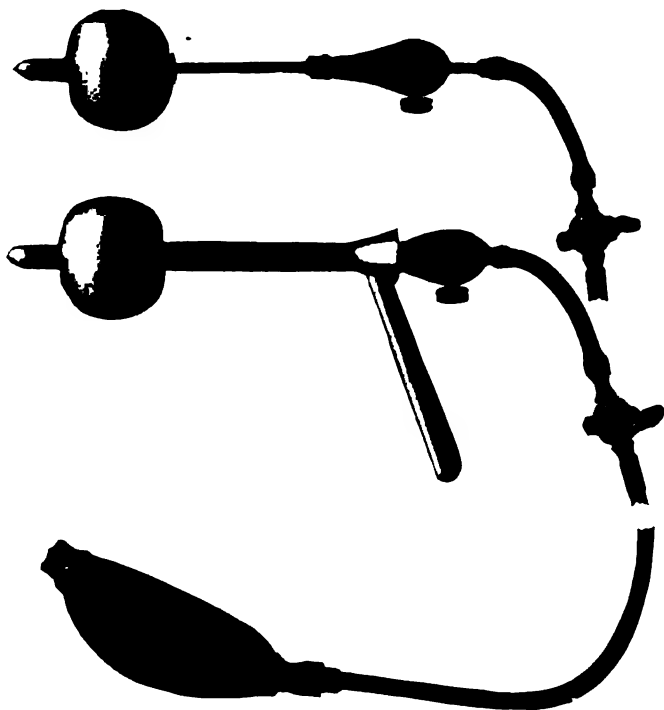


FIGS. 1 and 2.

are two perforations in the tube or stem, over which is placed a rubber tube one and a half inches long, especially heavy and made for the purpose. The ends are wrapped in small grooves with fine silk. Fig. 3 is the same part of the instrument with the air bulb compressed and the rubber tube or bag dilated. The stopcock in the soft tube is turned crosswise to maintain the distension. Fig. 4 shows the instrument in action. It should be introduced, as shown in Fig. 1, with the thumbscrew loosened and the handle moved back to its limit. The

cystoscope must be drawn back to the handle of the obturator and clear of the bag, in order to permit ready distension, as shown in Fig. 4. The cut shows a rather excessive distension of the bag, more than is necessary to secure a good result.

In my hands it has proved a most valuable acquisition, especially in the treatment of bladder irritation of long standing about the neck or trigonum. I have had a number of cases of dysuria with severe pain lasting for years that were promptly and permanently cured. One woman 28 years of age had suffered from her infancy. She was placed under



FIGS. 3 and 4.

ether before using the instrument, and the bladder carefully explored, and the only pathological condition found was a slight hyperemia in the neck of the bladder, which was sufficient to excite very painful and frequent contractions. I have recently received communications from her informing me of complete freedom from her former distress. There are others who were just as satisfactorily relieved, but in this instance the disease was of longest duration. In tubercular cystitis where there were three small ulcers in the fundus vesicæ the

most grateful relief was reported for a number of weeks each time the dilator was used, thereby aiding materially in the treatment of this distressing condition. In acute suppurative forms of cystitis, where the formation of pus is so great that copious diuresis will not wash it completely away, stretching the neck of the bladder is not indicated; thorough drainage is better. When the urine is alkaline the use of this instrument should be followed by five grains of saccharine three to four hours apart, to correct the abnormal reaction, and to prevent fermentation, and to lessen the development of the bacteria or spore of infecting media. Care must be observed in the use of this instrument that it is not introduced too far into the bladder, for in that case the expansion of the rubber will take place entirely within it and fail to stretch the muscles of the neck. If the central portion of the dilator is within the bladder side of the constrictor muscles, the instrument will suddenly slip into the bladder, with the result above mentioned.

For the past three years I have been making use of this method and find that it is a valuable aid in the treatment of milder and medium forms of cystitis. Calculi, other foreign bodies, and advanced tubercular diseases have been excluded in its use.

In skilful hands warm, sterile glycerin (the use of glycerin is preferred because water will rot the rubber) may be forced into the dilator by a piston syringe, as much more power can be secured in this way; but an unskilful person may run the risk of over-distension. To prevent this I have the bag covered with a fine silk net that limits the distension. This net is again covered with a thin rubber bag to prevent the silk thread cutting or abrading the epithelium.

Compression of the air bulb by average hand power does not endanger the urethra, but the effect is not as lasting as when the glycerin is used.

General anesthesia is necessary to secure the best results. I usually employ nitrous oxide gas with ether, but lately have been using nitrous oxide with oxygen gas. It is certainly a delightful thing to put a patient under the influence of an anesthetic in a minute's time, and, after the work is finished, to have her wake up as quickly without sick stomach or headache. Cocainization does not answer as well; it relieves sensibility of the mucosa in the urethra, but does not prevent pain entirely in the stretching. General anesthesia is preferred on another ground, that is, inspection of the bladder, which is desirable in these cases.

DERMOID AND OTHER CYSTS OF THE OVARY :

THEIR ORIGIN FROM THE WOLFFIAN BODY.¹

BY

SAMUEL W. BANDLER, M.D.,

New York.

(With illustrations.)

ALTHOUGH the retroperitoneal dermoids do not belong to our first category, namely, dermoids at places of union, yet we have mentioned them here to show the errors made in explaining difficult cases as fetus in fetu. To our first category belong also dermoids and teratomata of the spinal canal and dermoids in the coccygeal region (partly). Here likewise decided errors have been made through the acceptance of the terms "double monstrosities," and "parasitical double monstrosities" and "teratomata." Exactly as malformations occur in other clefts and points of union, so do we find the same forms in the region of the spinal canal and the coccyx. Wilms mentions a case of Sloman. In this congenital tumor, situated in the neck of a 15-year-old girl, were found bone, teeth, structures resembling some of the facial parts, skin, and mucous membrane. The teeth were milk-teeth with formative evidences of second teeth. Wilms says: "Sloman considers this case, and with justice, to be a parasitic formation greatly limited in its development and therefore in an extremely rudimentary stage. Here we may again consider all the various theories concerning double formation, yet an answer would be dealing only with possibilities and would therefore be more or less useless." I would ask how, even if dealing with probabilities, we can explain as a double monstrosity a case containing, among other structures, teeth. The medullary plates are capable of forming each a fetus and of producing in this way a double monstrosity. Then, however, one fetus, if its entity be lost and if it be "in an extremely rudimentary stage of development," is not found in the neck of the other. Since clefts occur in the entire length of the spinal column (viz., spina bifida, hydrocele cerebri,

¹ Continued from p. 80, January JOURNAL.

hydromeningocele sacralis et coccygea) and in the occipital region (hydrocele cervicalis), this case of Sloman simply is an evidence of the occurrence of a dermoid in the cervical region, just as dermoids occur in the coccygeal region and at other points of union.

This Fig. 14, taken from Ziegler, after Von Recklinghausen, shows how, through a malformation of the spinal canal, a displacement of tissues has resulted in the formation of a tumor.

In this growth it was mainly mesodermal elements which went on to development. It may be seen, however, that the

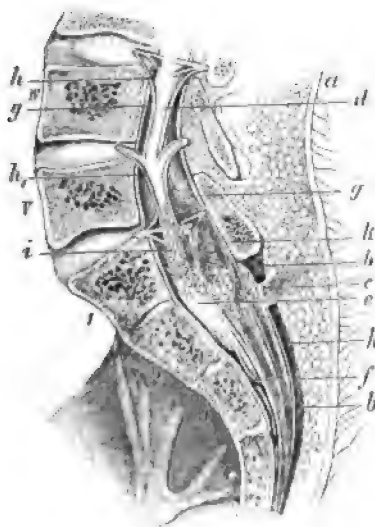


FIG. 14.—Spina bifida occulta with myelipoma in the vertebral column. Sagittal section one centimetre to the left of the median line (after Von Recklinghausen). *a*, abnormally hairy skin; *b*, fibrous cover as a dorsal wall of the sacral canal, with the cleft *c*; *d*, spinal cord; *e*, conus medullaris, situated at the second sacral vertebra instead of at the second lumbar; *f*, cauda equina; *g*, dura mater; *h*, *h*, recurrent anterior nerve roots of the third and fourth lumbar nerves; *i*, fat tissue; *k*, muscle bundles, IV. and V. lumbar vertebrae, 1-4 sacral vertebrae.

ectoderm cells have caused a pathological skin formation, so that the skin, usually clear at this point, shows a rich growth of hair. Had ectoderm cells been displaced at the same time, we would then have had the basis for the development of a dermoid containing epidermis and hair.

As has been mentioned before, the congenital sacro-coccygeal tumors are divided into (1) simple dermoids, (2) complicated dermoids, (3) teratomata, (4) cystosarcomata. The dorsal cysts, according to Mallory, are analogous to the malformations occurring in the branchial clefts. Tillmanns says:

"Some of these are to be considered genuine teratomata—*i.e.*, cystic growths which contain cartilage, bone, rudimentary intestine, brain substance, nerves, muscle, glandular structures. We are concerned here with parasitical double monstrosities—*i.e.*, fetus in fetu—and the various tissue formations found in these tumors are to be considered as rudiments of the skeleton and of the organic portions of an incorporated distorted fetus. In other cases the various tissue forms in the tumor are to be considered only as displaced cells, which have been taken up by the body and surrounded (*inclusio fetalis*)."

We see here that the expression *inclusio fetalis* is limited to displaced cells. Tillmanns says further:

"The congenital dorsal cystic tumors, the inversions of skin, and the fistulæ of the sacro-coccygeal region are, according to Mallory, analogous to the branchial fistulæ, and are to be considered as failures of development of the medullary canal and the spinal canal. Also in these tumors, situated anteriorly or posteriorly to the sacrum and coccyx, portions of intestine are found, which are not to be considered as fetal inclusions, but are rather to be considered as coming from the postanal caudal intestine and the neurænteric canal (the union of the caudal end of the intestinal canal with the end of the medullary canal)."

We see, therefore, that in this region likewise a sharp line of division is needed between double monstrosities and those formations resulting from displaced cells. The word *teratoma* is used with such varying signification that I show one of the existing views—*i.e.*, of Ziegler:

"Under the name of *teratoma* we understand tumor formations which consist of a large number of different tissues and in that way are distinguished from ordinary tumors. Some of these contain rudiments of portions of the skeleton, for instance, a spinal column, a pelvis, rudiments of various normal organs and tissues, such as intestine, brain, different glands, nerve and muscle tissue; others contain indeed tissue formations, such as muscle tissue, cartilage, skin tissue, bone, glandular tissue, cysts, etc., but no tissue pieces which may be considered rudiments of a definite part of the skeleton or of an organ. The first are indeed, with certainty, parts of a distorted fetus—*i.e.*, *acardiaci amorphi* which are closely united to the developed fetus. The latter, on the contrary, are more probably the result of a disturbance in the development of a single fetus—*i.e.*, of a displacement of cells."

Here we see that the name *teratoma* means for Ziegler either a double monstrosity or a formation the result of displaced cells. We see further how difficult it is to make a definite decision without closely viewing each individual case.

It is, however, desirable to introduce a different nomenclature for these two entirely different forms. I include under the name teratoma only solid dermoid cysts. It is, at any rate, of importance to observe that Ziegler grants to the solid dermoid cysts various tissue formations, such as muscle, cartilage, skin, bone, glandular tissue, cysts, etc. Ziegler says further:

"Viewed from the above-mentioned standpoint, an epignathus and an epignathus are also teratomata, *so far, at least, as their development sinks below a certain level.* In addition, they form most frequently extensive tumors at the extremity of the coccyx which are called sacral teratomata or teratoid sacral tumors. If the tumor presents formations which, when viewed externally, resemble parts of a fetus, then the diagnosis is not difficult that we are concerned with an unequal double monstrosity, and we call it an epipygus. The diagnosis is more difficult concerning tumors which show no special form; here the anatomical examination decides, wherein that which has been said about teratomata in general is decisive in making a diagnosis. Thereby it must be considered that in this sacro-coccygeal region there also occur, in the newly-born, and with the same forms as in teratomata, tumors which belong to the ordinary connective-tissue tumors as well as to the epithelial tumors."

It is clear how absolutely impossible it is to make from the above views a definite line of distinction. It seems, however, that in the case of dermoids in the sacro-coccygeal region just as grave errors of classification have been made as in the case of dermoids in the cranial cavity and in the mouth. So much, however, can be said: The quoted cases of Breslau and Beck, and the cases of Beck referred to but not quoted, *are surely not epignathi*, and the cases of Bonfigli, Meckel, etc., *are surely not engastrii*, but are to be explained only by our theory of a further growth of displaced cells.

Ziegler, following Ahlfeld, says:

"An epignathus is an acardiacus amorphus which is united to the oral cavity of its twin brother. Out of the oral cavity there protrudes, as a rule, a shapeless mass covered with skin which consists of cartilage, connective tissue, glandular tissue, brain substance, teeth, bone, intestinal structures, muscle, and skin with fine hair. In only rare cases is the epignathus situated at another point—for instance, at the orbit. An acardiacus amorphus consists of a formless mass covered with skin and containing only rudiments of organs; it is rare."

Thereby we find ourselves by no means compelled to recognize all such epignathi as twin brothers, nor to consider as

a double monstrosity a tumor whose contents resemble, on observation, parts of a fetus; for we have already seen how, through stretch of imagination, intestine, eyes, extremities, cranium, bladder, prostate, etc., have been described by various writers. If the tumor shows bone structures positively recognizable or organs verified beyond question, if its own surface is real skin, then a twin brother may be considered to be present. To show the errors still more clearly, I quote the following by Ziegler concerning *inclusio fetalis*:

“As regards *teratomata*, the parasite or the displaced cells are taken up and surrounded more or less by the growing body. If the *teratoid* tumors are taken up still deeper into the structure of a fetus, so that they appear externally only to a slight degree or disappear entirely, they are then considered as inclusions. According to their position we divide them into (a) *inclusio abdominalis* (*engastrius*), (b) *inclusio subcutanea*, (c) *inclusio mediastinalis*, (d) *inclusio cerebialis* (*teratoma gldl. pinealis*), (e) *inclusio testiculi et ovarii*.”

It is to be observed that in this classification either a parasite or displaced cells are considered under “*inclusio fetalis*,” a fact which, if it does not lead to error, at least makes no clear definition. Besides, one may therefrom draw the conclusion that a fetus may make its way into the mediastinum or into the pineal gland or into the testicle or ovary and there continue its growth—an idea which is not alone erroneous, but which also interferes with a proper conception of the mode of occurrence. It has been shown that the cases of Zweifel, Bardenheuer, Marchand, Meckel, Bonfigli, etc., are not *engastrii*, and that the dermoid cysts of the mediastinum are to be explained by cell displacement, and that the *teratomata* of the hypophysis are caused by cells dislocated during the formation of the hypophysis canal. The same mode of origin holds good for the *teratomata* of the pineal gland. Finally, the expression “*inclusio testiculi et ovarii*” is a false one, for no one believes in the entrance of one fetus into the ovary of the other—a view which might be easily taken from the arrangement adopted by Ziegler. The mode of origin of the dermoids and *teratomata* of this latter organ deserve special explanation.

With regard to the pineal gland Kollmann says:

“In the first place, it must be firmly fixed in mind that that organ (epiphysis) is of ectodermal origin, together with the entire medullary plate. and that for its development only spongioblasts are used which constitute a second generation of ectoderm cells. If in a tumor of the epiphysis horny struc-

tures, hair, and sebaceous glands are found, this points surely to ectodermal origin. Cartilage, fat, and smooth muscle fibres which also occur in such tumors, together with the mentioned epithelial structures, come from an invasion on the part of the mesoderm during embryonal growth."

As to double monstrosities, we may adopt with Ziegler the following definition:

"Double monstrosities are malformations in which the entire body or a part of it is duplicated. The parts thus doubly present are sometimes equally, sometimes unequally developed. In the latter case one part is distorted and appears as a parasitical dependent growth of the well-developed individual. All double monstrosities come from one ovum and develop on one blastula. They develop because the medullary plates of the primitive trace develop separately in their entire length or in parts. For the presentation of the monstrosities here considered it is better to lay aside the possibility of secondary union of separated formations, and to consider all double monstrosities as originating from an incomplete division of one fetal formation."

(Concerning the origin of double monstrosities, Förster, Virchow, Ahlfeld, and Gerlach speak for this theory of division.) It seems that this fact is proof of the error in Ahlfeld's view concerning epignathi, and it likewise speaks against the theory of engastrii, and especially against a like view in the case of Sloman. That very many of the tumors occurring in the sacro-coccygeal region and described as double monstrosities are nothing more than cystic or solid dermoids is not to be doubted. This question cannot be discussed further, since every case must be judged individually. We have considered this matter to show the existing errors, since there is a tendency to call every tumor of complicated structure containing bone, cartilage, glandular structures, etc., a double monstrosity

Kümmel described a congenital tumor in the sacro-coccygeal region made up of two parts:

"The rounded masses on the inside are connected *only loosely* with the skin covering the tumor externally. The tumor enters upward into the pelvis and is inserted in a fairly broad ligamentous surface on the anterior side of the sacro-coccygeal bone. The arches of the sacral vertebræ are closed by ligaments, likewise the first coccygeal vertebra. The following coccygeal bone is present, a third can be made out, a fourth can scarcely be recognized. The dura of the spinal canal is entirely unchanged.

"The rectum extends in a large curve in front of and above the tumor, so that the anus lies gaping two centimetres posterior to the base of the scrotum, and vertically under the symphysis. As groundwork of the entire mass is found a soft connective tissue very rich in irregular spindle cells and numerous small round cells. *The very numerous cysts* are lined with epithelium which shows low cubical and very high narrow cells of cylindrical form in one or two layers. The walls of the cysts show at times a papillary or plaited form; the spaces communicate with each other and contain masses of mucus and thrown-off epithelium. One of these spaces shows a girdle of smooth muscle fibres passing round about the cyst. In addition to islands of cartilage and pieces of bone, many muscle bundles were present in the tumor. An acinous gland bears much resemblance to a salivary gland or pancreas. In circumscribed



FIG. 14a

spots very dark pigment was present in plenty, and covers the wall of one cavity of a diameter of one millimetre. The regular plaiting, the very constant and equal arrangement of the pigment epithelium, makes the comparison with a fetal eye very close; no part of the optic nerves or of a lens is present. If, however, the clear mosaic of the pigmented epithelial cells and their uniformly simple arrangement be taken into consideration, as well as the absence of connective-tissue substance between the cells or of branching pigment cells, then nothing remains but to parallel these pigment cells with those of the retina."

It may be further mentioned that like pigment was present in very numerous areas of the tumor, in the various masses of the tumor, and far apart from each other. A certain substance present showed a great resemblance to embryonal brain or spinal cord tissue. Kümmel says that "the parasite shut in

subcutaneously presents a complete amorphous, but contains structures which, without doubt, belong to the head." Although Kümmel mentions that perhaps certain tumors of this form may be referred for their origin to the postanal or caudal intestine, yet, "because of their complicated structure, the majority of these tumors would better be reckoned with the parasitical double monstrosities" (compare Ahlfeld).

Fig. 14a shows this tumor. Attention is called to the fact that it was situated on the anterior surface of the sacro-coccygeal bones, that the dura of the spinal canal was completely normal, and that the tumor pushed the anus upward and under the symphysis. This position does not speak for the theory of a double monstrosity. Retina-like cells are also present.

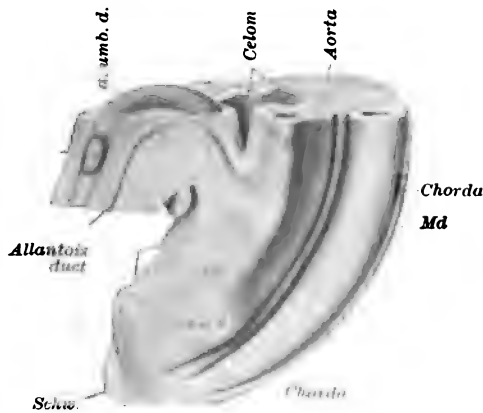


FIG. 15.

Exactly as ectoderm cells in various dermoid cysts form ciliated epithelium and epithelium with beaker cells, etc., so may we expect that pigmented cells more or less like the retina may also be present. Further, as Kümmel says, Rippmann mentioned the presence of retina epithelium in a much-discussed case of "inclusion in the cranium" with epignathus formation. It may be further remarked that this pigment was present in very numerous areas of the tumor, in the different masses, and far apart from each other.

We must, therefore, consider this tumor as originating from the caudal intestine. To explain this process I mention the following embryological facts:

In Figs. 15 and 16 it may be seen that the lower end of the intestine (*D*) forms a blindly ending sac (*Schwanz Darm*, or

Caudal Intestine), *Schw.D.*, which descends deep into the tail-like end of the body. It runs *behind the anus*, which is formed later, and is called postanal or caudal intestine. In human beings it disappears, as a rule, at an early period. The caudal end of the vertebræ (*Schw.*) likewise disappears under normal conditions. At times it persists in human beings. The following statement of Keibel is of utmost importance to our explanation:

"We may say, if we hold before our view the processes in the ventral region of the coccygeal protuberance (*Schw.*), that this coccygeal prominence is surrounded by the growth of the parts about it, and that the skin which covers it is in that way lifted off from it and used to cover these rapidly growing neighboring structures. The same process takes place about

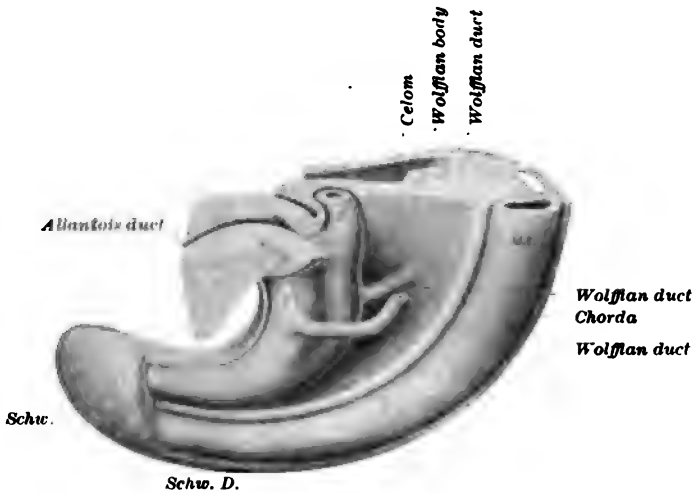


FIG. 16.

this 'coccygeal tail' as occurs to the penis in large inguinal herniæ, where the penis is robbed more and more of its skin through the decided stretching of the surrounding parts, until the penis disappears finally under the surface. It should be especially pointed out that by this withdrawal of the coccygeal prominence into the trunk also certain epithelial remnants originating from the caudal intestine may likewise be carried along. Such epithelial remnants, while they lie posteriorly to the anus at first, lie later *to the dorsal side of the rectum* and may, by the varying energies in the process of growth in which these various parts are engaged, be easily carried high up. It seems to me, in consideration of the practically important tumors of this neighborhood, especially the rectal carcinomata, to be important that these relations should be mentioned."

I believe that this statement fully explains the mode of development of the tumor of Kümmel, and at the same time other dermoids of this region—namely, through the dislocation of epithelial cells, with or without participation on the part of the caudal intestine. Since mesoderm cells are richly present in this region, and since remnants of this caudal gut may be left behind to greater or lesser extent, we have thereby the possibility of development of dermoid cysts of all degrees of complexity. The rôle of this caudal gut and these displaced cells is perhaps likewise evidenced by the fact that at the end of the rectum, as a rule, two forms of real diverticula, not including cyst formations, occur; according to Neumann, anal (ectodermal) and rectal (entodermal). Neumann removed an anal diverticulum which was connected with the rectum and clearly showed the type of the external skin, and at one point was united to the rectum. Here it was lined with mucous membrane. Perforating dermoid cysts in the neighborhood of the rectum may simulate diverticula.

The dermoid cysts in the region of the pelvic connective tissue form an interesting chapter. According to Sängér they are situated in the connective tissue between the rectum and the coccyx or between the rectum and the sacrum, in the connective tissue of the *cavum subperitoneale*, in the connective-tissue space under the *cul-de-sac* of Douglas, and above the *septum recto-vaginale*. These cysts consist of an epidermoid inner, and a connective-tissue mesodermal outer layer in simple arrangement. In three of such cases, of which Sängér has collected seventeen, were found hair, a piece of bone in only one case, which was a congenital tumor of the *regio ano-coccygealis*; teeth or elements of the internal blastodermic layer were not found. Sängér says "the dermoids of the bladder, rectum, and uterus have not developed genuinely in these organs, but have made their way there from cystic dermoids of the pelvic connective tissue or from dermoids of ovarian origin" (?). This last view of Sängér's is absolutely incorrect. Sängér says further: "Also real fetal inclusion would be taken into consideration for such cases as show evidences of an embryonal formation of three layers, if their origin from the ovaries or from ovarian cells can be explained only with difficulty." Sängér observes the more frequent occurrence of connective-tissue dermoids in the left half of the pelvis, and believes that this fact stands in relation to the position of the rectum toward the left side. According to our statement of Keibel's view, we may understand how, through this position of the rectum and

through the participation of the caudal gut, the latter and the dislocated epithelial cells may favor the left side of the pelvis. Although this explanation makes clear the origin of certain dermoids of the pelvic connective tissue, others are in all probability dependent for their origin upon the Wolffian duct, as will be shown later. In the same way, through the Wolffian duct, the dermoids of the bladder, cervix, and vagina may be undoubtedly explained, and Sanger is mistaken when he says that these are pelvic dermoids or dermoids of the ovary which have forced their way into these organs. When Sanger further says that real fetal inclusion may be taken into consideration, for those cases "whose origin from the ovary or ovarian cells can be explained only with difficulty," he gives us another illustration of the ready use of the phrase "inclusio fetalis" for cases whose origin is not readily explained. Whether he means thereby a double monstrosity or displaced cells is not made clear in his article. Kuster described a dermoid situated between the bladder and the uterus, but *in front of the peritoneum*. In this tumor were two pieces of bone. Geyl described a small teratoma of the cervix.

Sanger¹ says:

"As is known, dermoids have been found also in the uterus, in the bladder, and in the rectum, and for these a primary location at the place of discovery has been accepted. Such tumors of the uterus have been described by Kiwisch and E. Wagner. Their authenticity has, with justice, been doubted by Gusserow. Klob mentions from the earlier literature cases by Baillie, Fabricius Hildanus, Vicq d'Azyr, which are still less authentic, as is also the case of Cousot, in which the cervix was named as the seat of the tumor. Recently a case was described by Bartlett which is nothing less than an evidence of these errors. During a forceps operation a cyst the size of a pear and filled with hair was disclosed. The patient died, and at the autopsy there was found no injury to the genitalia except a tear of the perineum. Bartlett concluded that the cyst 'was probably attached to the uterine surface.' Since, during the extraction of the shoulders, the cyst protruded in the perineal region between vulva and tuberositas ischii, it is most probable that this tumor lay in the pelvic connective tissue and was expelled through the perineal tear. Most probably in the cases of E. Wagner and Cousot, where the child's head was extracted with forceps without much force, there was likewise a rupture of the vagina or of the collum uteri with an expression of the dermoid situated in the pelvic connective tissue. In both cases convalescence was so favorable that an injury to the peritoneum can be easily excluded."

¹ Archiv f. Gynakologie, Bd. xxxvii.

Sänger says further:

"The dermoids of the bladder come, as a rule, from dermoid cysts of the ovary which have made their way into the bladder. There have been several cases described by Winship, Charcot, and E. Küster in which the cyst lay in the connective tissue between the uterus and the bladder; by Paget where it lay in the wall of the bladder; further, by Martini, an 'open dermoid' of the bladder in a child born with atresia ani et urethræ and which died of general peritonitis on the second day. In addition to cryptorchismus there was found absence of the left kidney, of the left ureter, and of the urethra. The posterior wall of the bladder, in which the colon ended, had the character of external skin, with hair follicles and fine hairs. Martini distinguishes: 1, purposed or accidental introduction of hair into the bladder; 2, rupture of a dermoid cyst with hair and teeth into the bladder, pilimiction; and 3, the formation of hair on the bladder mucous membrane (*trichiasis vesicæ*). Since he decidedly denies the possibility of hair originating from a mucous membrane, he understands under *trichiasis vesicæ* those anomalies of development in which a part of the bladder wall consists, in intrauterine life, through fetal inclusion, of dermoid tissue containing hair follicles and where a previous cystic form of this growth cannot be proved. There has never been observed in an adult a *trichiasis vesicæ* or *uteri*. Probably the dermoids of the bladder are always secondary and originate mostly from the ovaries (?); some, however, from the pelvic tissue.

"Characteristically, the literature makes no mention of dermoid cysts of the vagina—*i.e.* vaginal cysts with dermoidal contents. (A dermoid of the vulva, probably an atheroma, has been described by Kirmisson.) If such tumors really occurred here primarily they would certainly not be overlooked. The paravaginal connective tissue does not belong to the vagina, but, under the levator ani, is to be considered part of the *cavum ischii rectale et subcutaneum*; above, the same is to be considered a part of the *cavum subperitoneale pelvis*. Winckel considers cases like the two of Mannel vaginal cysts, because they probably originated in the perivaginal tissue and on further growth infiltrated the vaginal wall, when they were no longer to be separated from it. They form for him a separate group, the subserous vaginal cysts, which are situated superiorly in the perivaginal connective tissue under the peritoneum; below, between the vagina and the rectum. If that be the case, then the tumor of Emmet must be considered a vaginal cyst, which certainly is incorrect. I believe, therefore, that we are not justified in ascribing to the vagina dermoid cysts and other primary cystic or solid tumors of the connective tissue which may lie near the vagina and perhaps occasionally unite with it, since they do not originate from the constituents of the vagina itself or from rudiments of organs which run in the vagina. Since the discovery of the vaginal glands, the rudiments of the canal of Gärtner, etc., the old view of Roki-

tansky and Scanzoni can no longer be held that 'the majority of all vaginal cysts develop in the perivaginal connective tissue and originally have nothing to do with the vagina.' The origin of certain vaginal cysts, which Thorn very acceptably explains as traumatic lymph extravasations, may well be ascribed to the pelvic connective tissue, for the reason that the largest lymph channels are found in it."

Sänger can be best answered in the words of Geyl: "

"Digital examination showed that a round, irregularly formed solid tumor was present up in the laquear posterior vaginae, and that it seemed to continue into the posterior part of the cervix uteri. The diagnosis made was, vaginal tumor whose anatomical structure could not be determined without microscopical examination."

The microscopical examination showed that the surface of the tumor was composed of a cutis-like tissue and that the tumor contained fat tissue, muscle, bone, nerves, etc. Geyl made the diagnosis *teratoma*. In his most interesting article Geyl says further:

"In his day Friedrich Ruysch received a remarkable specimen, a dermoid cyst which, in addition to undeveloped pieces of bone, contained molar and other teeth. According to the statements of trustworthy persons, this tumor came from the stomach of Jacob Rubens, who died in the Samaranger Krankenhaus in the year 1716. It did not occur to Ruysch to doubt the correctness of this information, for sebaceous tumors, or atheromata, and their ubiquitous nature and their peculiar contents (hair, cheesy substance, teeth, and bone) were known to him from personal experience. He closes his remarks about this case as follows:

" 'I would not be surprised if any one were to ask me how it can happen that all the hair follicles should be found inside of a tumor closed on every side, and especially where a fourth part of a four-footed animal supplied with a human nail may originate. Surely I can scarcely answer anything else than that the manner in which Nature works, builds, and changes is not so clear that we can state beforehand what is possible or impossible for her. '

"I read in my Dutch translation of the clinical lectures of Kiwisch: 'In another case we found on the inner surface of the uterus a cyst the size of a child's head, containing hair and teeth products.' It is not to be doubted that Kiwisch could scarcely have expressed himself more concisely, at the same time scarcely more positively, and therefore it appears to me unfair and without reason that Gusserow should seek to weaken this phenomenon by saying: 'Kiwisch's statement is too short to be proof of a phenomenon anatomically so difficult to comprehend.'

"It is argued against another case, described by Wagner, in which the cyst with a pedicle (Klob) appeared after a forceps delivery of the fetus, that the connection of the tumor with the endometrium was observed by the eyes of no one nor felt with the finger; further, that it could just as easily have come from another point. For this, only the supposition is necessary that *durante partu* a tear was caused through the vagina and Douglas of a length which permitted the exit of the cyst, and that afterward the pedicle was accidentally torn. Gusserow neglects to observe that then it must be granted that the accoucheur permitted the above-mentioned events to pass unnoticed. Sanger does not grant the correctness of Bartlett's view of the nature of his tumor. According to Bartlett this tumor was probably attached to the uterine surface. Sanger, to whom no other sources are open, but who takes a sceptical position with regard to uterine dermoids, considers it probable that a tumor of the pelvic connective tissue was present and that it made its way into the outer world through a tear in the perineal septum. We should, therefore, not be surprised that he accepts with approval the fact that Gusserow does not mention the cases of Baillie, Fabricius Hildanus, and Vicq d'Azyr quoted by Klob, for the older the cases the less trustworthy. The case of Cousot (to my regret the original referat is not in my hands), 'where the cervix is named as the seat,' is to them also as little genuine as the other cases and must be explained in the same way as Bartlett's case. It is clear that Sanger sees only the dermoid cysts of the pelvic connective tissue, and that Gusserow denies the existence of uterine dermoids 'because the phenomenon is anatomically difficult to comprehend.' In the *Centralblatt*, 1894. page 664, is a statement of Stewart's referred to as a dermoid cyst of the uterine wall, and I recollect that in recent years I have found other such cases described. Weak grounds, indeed, are those on which the reality of such tumors is questioned. So far as I am concerned, the quoted observations are proofs that dermoid cysts may develop out of the endometrium, and from an observation of Treub published by Schouwman it appears that the epithelium of the tube may, under circumstances, bring about the same result. A tube sac obtained by operation (the ovary of the same side was intact and free, the sac continued in that part of the tube situated near the uterus) contained fat and hair.

"The day of Cohnheim, who taught that new growths are nothing else than developed displaced embryonal cells, is past (??). Of all tumors only the teratomata or their equivalents are congenital, not the ovarian dermoids. It is said that at least their foundation must always be sought for in intra-uterine life, but this statement cannot be defended by a shadow of proof" (??).

Geyl defends in an energetic way the theory of parthenogenesis, and says finally:

"The statement which supports the possibility of growth of a non-fecundated ovarian ovum rests upon the fact, proved on

many sides, that the eggs of many mammals, also those of the human being, may begin their growth within the follicle, and that they may retain this power even if removed from their place of origin—for instance, even in the tube, where they are surely under unfavorable conditions as regards nutrition. All observations which are concerned with dermoids undergoing development may be considered as proofs of this statement."

Geyl believes that this tumor in the cervix originated at the point where it was found, for "the tumor shows certain peculiarities which can only be understood upon the supposition that their presence is due to the endometritis which has visibly weakened the patient." Geyl is right; the tumor did originate at the point where it was found, but his astonishing idea that a teratoma containing so many different tissue forms developed, through a pathologically increased anaplasia, from a uterine epithelial cell, is decidedly strange and unsympathetic.

In order to show the process through which this case of

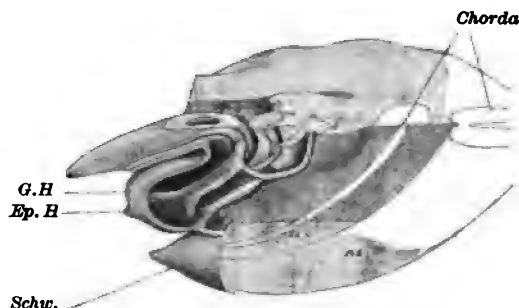


FIG. 17.—*Wf.G.*, Wolffian duct; *U*, ureter; *Schw.*, "tail"; *D*, intestine; *H*, part of subsequent bladder; *Ch*, chorda.

Geyl, the dermoid cysts of the bladder and uterus, the case of Küster, and also some of the cases of Sängner originated, I give the following embryological illustration:

In the cloaca and later into the sinus urogenitalis (*sin.ug.*) empties the Wolffian duct (*Wf. G.*, Fig. 17), the excretory canal of the excretory apparatus. Ventrally to the caudal tail (*Schw.*) there occurs a depression in the membrane of the cloaca (made up of ectoderm and entoderm), which is later perforated, forming the anal opening (*Aft.*, Fig. 18). The cloaca is a short sac continued dorsally into the intestine and ventrally into the subsequent urinary bladder (Figs. 15, 16, *Cl.*). Later a decided portion of the caudal end of the intestine is reduced to a thin epithelial strand and then disappears as a rule. Mesoderm pushes the intestinal canal against the sacral

vertebræ, the allantois duct (*All. G.*, Fig. 17) with the beginning of the subsequent bladder moves nearer to the abdominal wall, and there results a space between the intestinal canal (*D*) and the allantois duct (Figs. 17, 18). We then have the sinus urogenitalis, which is closed on the ventral portion of the genital prominence (*G. H.*, Fig. 17) by the cloacal membrane, which there receives the urogenital cleft. Later comes an opening for the rectum through a depression in the ectoderm (anal groove), so that the anus develops independently of the end of the intestine. We therefore see that the cloaca has been divided into a ventral canal (from which develop a part of

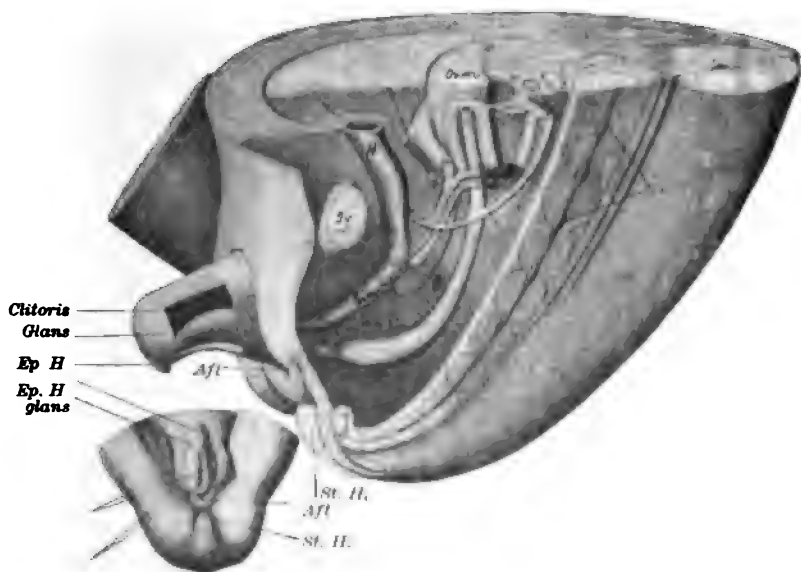


FIG. 18.

the bladder, the urethra, and the sinus urogenitalis) and a dorsal canal (from which develops the rectum). An entodermal dividing wall has moved gradually toward the anus; mesoderm completes the division and surrounds the entodermal canals with that tissue which furnishes muscle, connective tissue, and vessels. When this dividing wall reaches the cloacal membrane we then have two completely closed and completely separated canals (Fig. 18). This division is completed by external perineal folds. These are folds of mesoderm which develop around and about the anus and which change the future ectodermal anal opening into an anal groove. This

anal membrane is perforated later than the urogenital membrane.

In Fig. 19 we see the ducts of Müller and the Wolffian ducts, the ureters (*U*), and the future bladder in which they empty. The point *S* (Fig. 18) is the future hymen, so that it can be seen how the Wolffian ducts (*Wf. G.*) reach almost to the outer end of the future vagina. That part of the ducts of Müller (*Mül. G.*, Fig. 19), up to the point of bifurcation, becomes vagina, cervix, and uterus.

If the Wolffian ducts, as we shall later prove, are able to take with them ectodermal and mesodermal cells, it is evident from Fig. 19 that they may lie (1) parallel to the future uterus, cervix, and vagina, or (2) between the uterus or cervix and the bladder, or (3) between the vagina and uterus on the one hand

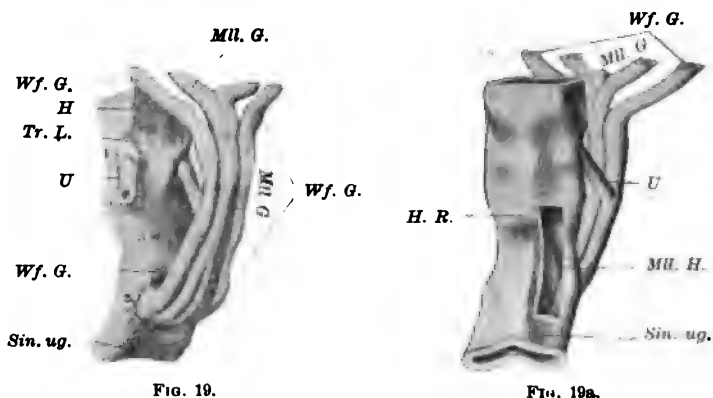


FIG. 19.

FIG. 19a.

and the intestine on the other, but always *outside of the peritoneum*—see Fig. 18, where *C* represents the fold of Douglas and where *X* represents the plica vesico-uterina. In this way may be explained a portion of Säger's dermoids of the pelvic connective tissue, the dermoids between the bladder and the uterus (but extraperitoneal), on the cervix, in the pelvic connective tissue at the side of or in the neighborhood of the vagina, in the space of Douglas under the peritoneum, and in front of or at the side of the rectum. Fig. 20 shows these relations very clearly.

In order to make more evident the fact that cells in varying combinations may be displaced by the Wolffian ducts, I would mention what has been stated before, that the Wolffian duct originates from the ectoderm, lies later close to the ectoderm, and continues its growth downward through the meso-

derm until it reaches the cloaca, and that it is therefore in a position to carry with it into different parts of its subsequent location both ectodermal and mesodermal cells. This is further proved by the following from Wilms.¹ Wilms explains through cell dislocation on the part of the Wolffian duct the complicated vaginal tumors (rhabdomyoma sarcomatodes, sarcoma fibrosum, myofibrosarcoma with striated muscle fibres, etc.) and the mixed tumors of the cervix uteri (containing sarcomatous tissue with cartilage, striated muscle fibres, etc.). He says: "This cell dislocation is not a displacement of finished cell elements, but a removal of not yet differentiated mesoderm or mesenchym cells, which only at their future seat of development form tissues corresponding to the normal embryonal differentiation." He gives the same explanation in

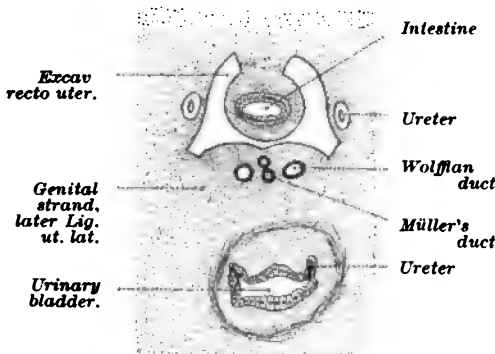


FIG. 20.—Genital strand. Human embryo of nine weeks. Transverse section. After Kollmann.

the case of mixed tumors of the bladder and of the vas deferens. Wilms shows the fact that mesoderm cells removed from their place of origin later on form cartilage, myxomatous tissue, etc., which they would have formed had they remained in their normal situation. Since these tumors are sarcomata, Pfannenstiel evolved the theory of metaplasia through which cartilage, etc., are formed directly from the sarcoma cells. Pick holds the same idea. That this view is incorrect, that it causes confusion in the groundwork of pathology, and that it takes us far from the great truths contained in the theory of Cohnheim is not to be doubted. We likewise see how unstable would be our pathological views if we were compelled to accept the explanation which Geyl gave for his teratoma of the cervix. Just as in these mixed tumors only mesoderm cells are dislo-

¹ "Mixed Tumors," vol. ii.

ated, forming sarcomatous tumors of the vagina, cervix, and vas deferens, etc., so likewise can ectoderm cells be removed, and we would then have an explanation for the occurrence of dermoid cysts in these places. According to Englisch those different cysts which occur in the posterior wall of the bladder, especially in the connective tissue between the bladder and the rectum, originate as a rule from remnants of embryonal structures, from the Wolffian body and the ducts of Müller, or through cystic dilatations of the seminal vesicles and the sinus prostaticus. Bryant finds dermoid cysts in the region of the bladder to be rare, and explains them through an inclusion of dermoid cells. In the case of Martini, the posterior wall of the bladder had the character of the external skin and was covered with hair follicles and hair (*trichiasis vesicæ*).

Some of the cases which Säger considers to be dermoids of the pelvic connective tissue Winkel considers to be dermoids of the vagina, because they originated in the perivaginal connective tissue. These may, in consideration of the course of the ducts of Wolff, be certainly classed as dermoid cysts of the paravaginal tissue, just as certain vaginal cysts result from rests of the Wolffian duct. The latter may be explained as follows: During the development of the ducts of Müller the Wolffian ducts become rudimentary. Often the proximal and the distal ends remain; at other times the entire duct disappears. According to Kollmann it is present, at the side of the uterus, as an indistinct structure in the human female fetus in about every third case, with or without epithelium. The lower end remains, as a rule, along the cervix, but only visible in transverse sections.

Walzberg-König and Biernacki maintain that the dermoid cysts of the pelvic connective tissue are of ovarian origin. Säger proves this view to be false for the following reasons:

"1. The location, the extent, the structure and growth are entirely different from the intraligamentous and subperitoneal cysts of the ovaries, of which only the proliferating cysts of the ovary and of the parovarium are here considered. Their universal situation in the pelvic connective tissue, the thin walls of these dermoids, which usually are unilocular, the characteristic displacement of the rectum, the vagina, the uterus, and the levator ani, and their growth downward toward the perineum, are typical. 2. A connection of dermoids of the pelvic connective tissue with the ovary has not been proved clinically or anatomically. 3. A dermoid cyst of the ovary which has developed entirely intraligamentally or subperitoneally has not been described (?).

"Such a connection is as little necessary in explaining the origin of dermoids in the pelvic connective tissue as, for instance, would be needed in the case of dermoids of the orbita or the lungs. The unilocular, smooth, thin-walled dermoids containing little or no hair, especially those of the deeper and lateral portions of the pelvic connective tissue, are best explained as embryonal inversions of ectoderm." (But how and where, Sanger does not say.)

Küster, who described a properitoneal dermoid between the bladder and the uterus, found therein two pieces of bone. He observes that one may be "considered without hesitancy as a rib, which is united to the wall by a firm band"; of the other he says: "The other is a flat bone which I cannot positively identify, probably a pelvic bone." It may be observed how a piece of bone, without proof and perhaps through a distant external resemblance, is called a rib, and the other a pelvic bone. As a result of this description we frequently meet with the statement that in ovarian dermoids (?) ribs and pelvic bones have been found, for it was taken for granted that this dermoid originated in the ovary and made its way between uterus and bladder. Küster says that only one other case has been reported in which a properitoneal dermoid was found in the same place (Nélaton). As a result of the above explanations I would recall the fact that, in spite of the view of Sānger, the dermoids of the bladder, cervix, and rectum have really originated in these organs and have not made their way into these situations from the ovary or from the pelvic connective tissue. We see further how easily a fetal inclusion is taken for granted as soon as the exact mode of origin is not clear. We see, finally, that all these latter cases are not difficult to explain if the complicated embryonal processes are closely studied. So far we have discussed the dermoids occurring in nearly all parts of the body, with the exception of the dermoids and teratomata of the ovary and testicle, with which, however, the following portion of this work is concerned. If we group together the cases so far quoted with their contents we have the following:

Dermoid of the hypophysis duct (Breslau and Rindfleisch).—Called "fetus in fetu." Contained, according to description, eyes, several extremities, cartilage, bone, muscle, nerves, glandular substance, intestine-like glands.

Dermoid of the sella turcica (Beck).—Explained by Beck as the result of displaced cells. Contained fourteen *teeth*, bone, cavities lined with ciliated epithelium, etc.

Dermoid behind the eye (Weigert).—Described as "fetus

in fetu." Contained cartilage, bone, mucous-gland cysts, "intestinal" structure, bronchial elements, glands of the form of the glands of Lieberkühn, groups of lymphoid cells, cysts with stratified ciliated epithelium, etc.

Retroperitoneal dermoid (Marchand) (considered by Wilms to have originated from the Wolffian duct).—Described as "fetus in fetu." Contained cysts with ciliated epithelium, mucous membrane of the character of the mucous membrane of the large intestine, cranium, "prostate," intestine, and glia tissue.

Retroperitoneal dermoid (Bardenheuer).—Contained *teeth*, hair, and bone.

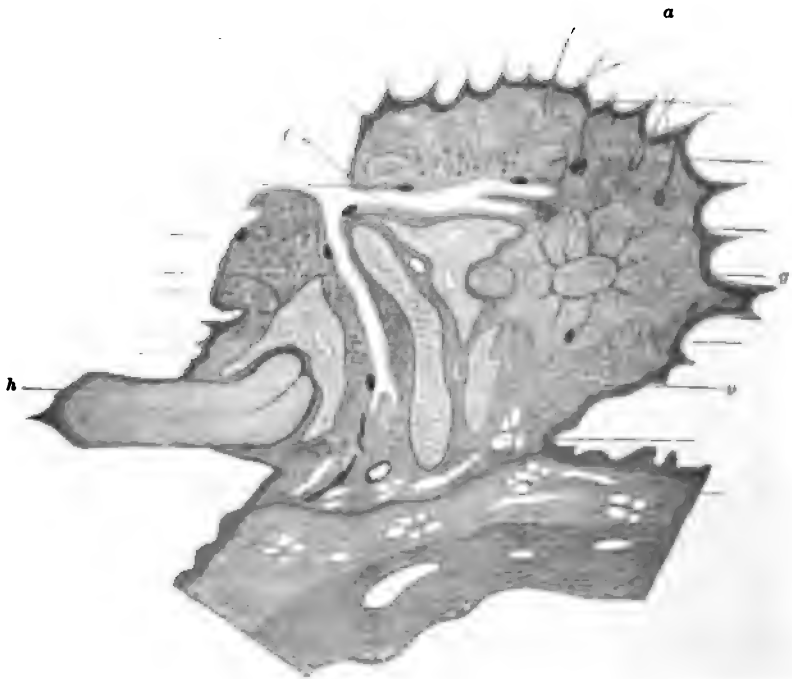


FIG. 21.

Dermoid in the region of the liver and stomach (Bonfigli).—Contained bone in which were firmly fixed two *teeth*, nineteen molar *teeth* free in the cavity, cysts filled with mucus.

Omental dermoid (Pommer).—Contained joint-like structures covered with skin, retina-like cells, *teeth*, "appendix."

Dermoid on the anterior surface of the sacro-coccygeal bone (Kümmel).—Contained bone, cartilage, *tooth* formation, mucous cysts, retina-like cells, muscle fibres.

Cervix teratoma (Geyl).—Contained bone, muscle fibres, nerves, etc.

All these dermoids are undoubtedly to be explained through a displacement of cells, and this process has been supported by

our embryological discussion. We have in dermoids of the ovary the same elements, yet, as regards these tumors, writers have gone further and have described structures resembling the eye, maxillæ, extremities, parts of intestine, trachea, mamma, etc., which views rest on the same foundation as those heretofore criticised, viz., imagination and far-fetched resemblance. Here the same mistakes have been made as in the above-mentioned cases.

If we are able to prove embryologically a possibility that displaced cells, carried into or near to the ovary, are the cause



FIG. 22.—Prominence on the inner surface of a dermoid cyst of the mediastinum. Separated from the lung (*a*) by a membrane (*b*) adherent to the pleura. *C*, normal cutis with hair; *D*, sebaceous glands; *F*, fatty tissue; *G*, hyaline cartilage; *H*, canal with ciliated epithellum; *I*, nerves.

of these tumors, we will then have an explanation which is in harmony with the explanations given for the above-mentioned cases. That this is, beyond any doubt, the case as regards ovarian dermoids, the following work will prove. In addition we shall explain at the same time the origin of most of the other ovarian tumors, cystic or solid.

At any rate, the dermoid cysts of the ovary form no specific group. We find on the inner surface of these cysts a prominence whose base is formed by the tissue of the ovary. In this prominence are found sebaceous glands (*a*, Fig. 21), hair,

cartilage, bone (*g*), glands lined with squamous epithelium, with cylinder epithelium, with ciliated epithelium; also teeth (*h*), glia tissue (*f*), lymph-adenoid tissue, etc., as may be seen in Fig. 21 from Wilms.

The same prominence occurs in other dermoids, as Fig. 22, from Wilms, a prominence in a mediastinal dermoid, proves.

We have already seen in Fig. 10 how the Wolffian body and the Wolffian duct are in a position to cause not only mixed tumors of the kidney, but also retroperitoneal and omental dermoids; and Wilms grants that the case of Marchand is not a fetus in fetu, but, as we have shown, is due to the ectodermal origin of the Wolffian duct. How easy it should be in the same way to explain the origin of dermoid cysts of the ovary, for the ovary later develops at that point at which the Wolffian



FIG. 23.—Middle blastodermic layer of a human embryo, still without primary vertebrae and chorda. Transverse section. After Keibel.

duct and the Wolffian body developed, and the Wolffian body takes part in the formation of the ovary and lies later in the ligamentum latum as the parovarium and the paroöphoron, not alone at the hilus of the ovary, but also sends some of its canals through the hilus into the ovarian tissue. We discuss, then, these embryological facts, as well as the origin of the cysts of the ovary, especially the cystomata pseudomucinosae which are often found with dermoid cysts in the same or in the other ovary.

The following processes, which I have studied in the specimens of Prof. Spee, have been put together, for the sake of clearness, by consulting the text books of Kollmann, Hertwig, and Nagel, since I shall later explain some important fundamental views which differ from these. These processes show the extremely interesting and, for our theory, weighty changes in the urogenital system during embryonal life. We find at

first the formation of the head-kidney, or pronephros, with its excretory duct, giving way later to the formation of the primary kidney with the same excretory duct. Both are replaced

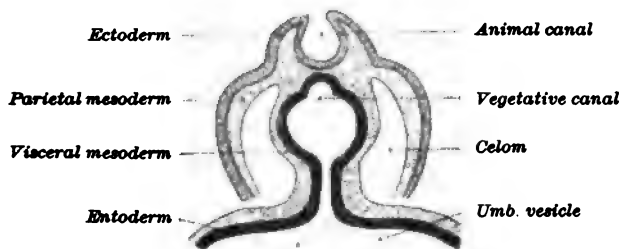


FIG. 24.—Animal and vegetative canals. Schematic development. After Kollmann.

by the permanent kidney. We shall then discuss the duct of Müller and then the ovary.

The head-kidney disappears and only slight evidences are found in the human being.

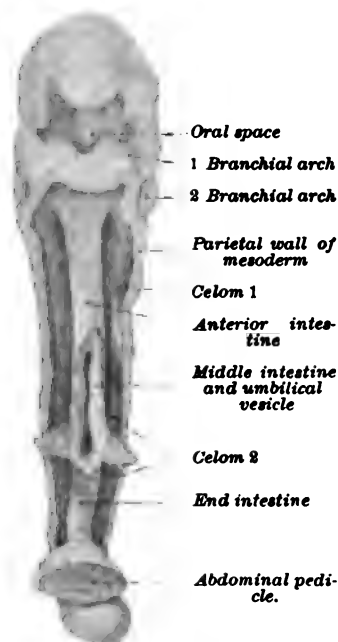


FIG. 25.—Human embryo 2.4 millimetres long, with heart and umbilical vesicle removed and umbilical pedicle cut. Reconstruction. After His.

The primary kidney leaves rests behind, the parovarium (the epididymis in man) or epoöphoron, and the paroöphoron (parepididymis), and also parovarial formations.

The ducts of Müller form the uterus and tubes (minute explanation is given later).

Fig. 23 shows the middle blastodermic layer of a human embryo still without primary vertebræ and without chorda (transverse section after Keibel).

Through the division of the mesoderm there is formed a parietal and a visceral layer, which results in the formation of a symmetrical space (celom). These two layers or folds approach each other in the anterior median line and form the cylindrical body shape through the closure of the intestinal canal and the abdominal wall.

This space in the embryonal body is intended to accommo-

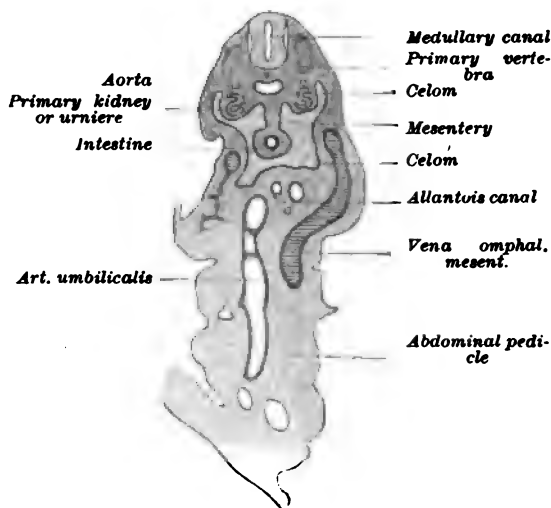


FIG. 26.—Human embryo 5 millimetres long. After His. The section includes the umbilical pedicle also.

date the internal organs and is called "the celom." From this celom are formed three divisions: (1) the primitive pericardial space; (2) the symmetrical pleural spaces; (3) the abdominal cavity.

The celom wall (the parietal layer of the mesoderm, Fig. 25) consists of mesoderm from which develop connective-tissue elements and involuntary pale muscle fibres. Externally it is covered by ectoderm, and internally by the celom epithelium, which is formed of mesoderm cells. The visceral layer of the mesoderm covers on the posterior body wall the entire intestinal canal (Figs. 24 and 25), forms the primary mesentery (Fig. 26), the mesenterium commune, and furnishes the mus-

cle layers of the intestinal system and the connective-tissue cells and muscle cells of the mucosa. It is lined within by the entoderm of the glandular layer, and is covered externally by the celom epithelium (Figs. 24 and 26). The celom epithelium is, as we shall see later, the location for the development of the generative organs.

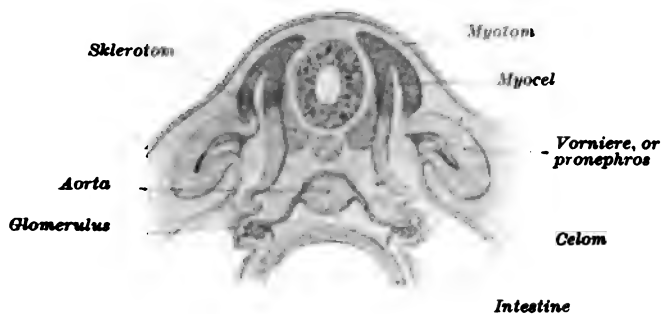


FIG. 27.—Transverse section in the region of the pronephros or vorniere (ichthyophis gut). After Semon.

In the parietal mesoderm (Fig. 27), where the segmented portion goes over into the unsegmented portion of the middle blastodermic membrane, the pronephros, or head-kidney, is formed. It consists of canals which stand in communication with the celom. These are called diverticula. The opening

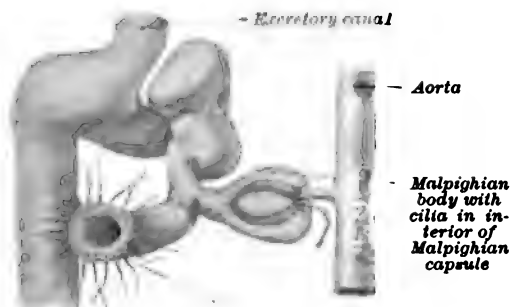


FIG. 28.—Nephridium of an amphibia (ichthyophis gut). After Semon. To the left is the excretory canal, into which empties the segmental canal.

into the celom receives a ciliated, funnel-shaped character, so that every diverticulum becomes a kidney tubule resembling that in Fig. 28.

At their peripheral end the diverticula unite into a common canal which lies close to the ectoderm, as Figs. 29 and 30, of a later stage, show.

This common canal (the excretory duct, the Wolfian duct) lies between epidermis and the parietal mesoderm.

It extends over several body segments, and is in this way united or connected with the abdominal cavity by several consecutive openings or head-kidney funnels. The tubules lie in

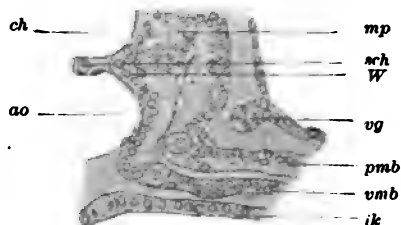


FIG. 29.—Transverse section through an embryo of *Pristiurus*. After Rabl. *ch*, chorda; *mp*, muscle plate of the primary segment; *w*, skeletal tissue which has grown out from the medial wall of the primary segment; *ao*, aorta; *ik*, entoderm; *pmb*, *ymb*, parietal, visceral mesoderm; *vg*, duct of pronephros.

the neighborhood of the aorta. Laterally, to the right and left of the primary intestine, develops the Malpighian capsule (Fig. 26).

Into each of these a branch from the aorta makes its way and extends into capillaries, as in the Malpighian bodies in the

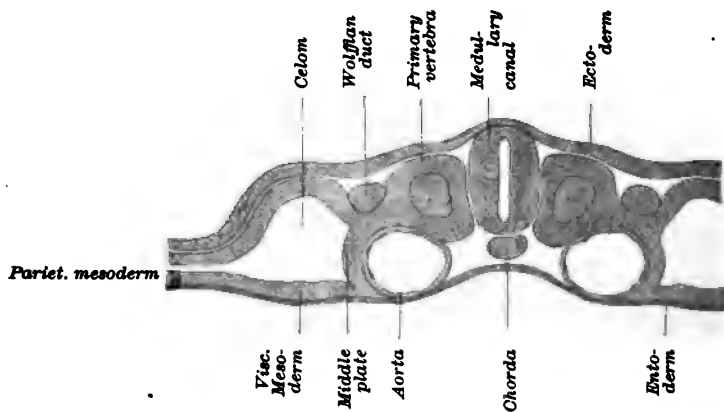


FIG. 30.—Embryo of bird with four blastodermic layers, at beginning of third day. Transverse section.

permanent kidney. Finally the Malpighian body is united with these kidney tubules, whereby a branch of the tubule with its ciliated funnel (Fig. 28) surrounds the vessel and its covering and a small portion of the celom. This vessel-knot develops in the wall of the abdominal cavity. The common

canal is later the excretory duct of the primary kidney and is called "the Wolffian duct." It grows gradually through increase of its own cells, and extends so far that it eventually opens into the cloaca, becoming in its course more and more separated from the ectoderm. It is not definitely decided (?) whether, at the point of union between the Wolffian duct and the ectoderm, cells of the ectoderm are furnished to the Wolffian duct, or whether the material for the duct comes from the mesoblastic primary kidney formation itself as it continues its growth posteriorly. Concerning the development of this duct, it must be mentioned here that Prof. Spee believes that *not*

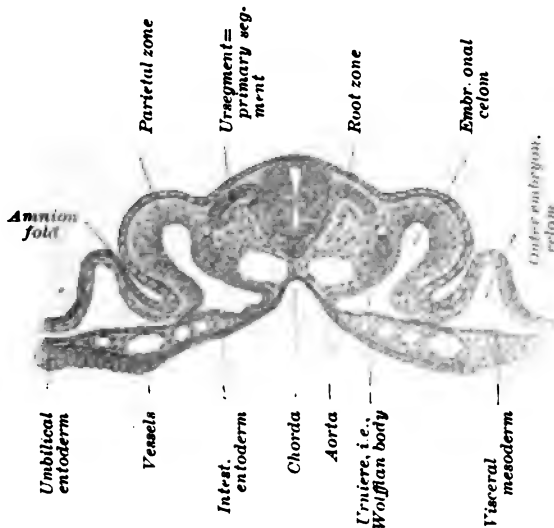


FIG. 81.—Transverse section through an embryo chicken with twenty-four primary segments. After Balfour.

only does the Wolffian duct stand in close relation to the ectoderm, but that it originates from the ectoderm.

The pronephros is retained in certain fishes. In amphibia it disappears; in the amniotæ evidences have been found. In mammals evidences have been found in rabbits, and evidences of its existence are claimed to exist in man. In amphioxus a pronephros has been shown which begins in the abdominal cavity and extends to the branchial space, *i.e.*, empties externally. Since the nephridia of the invertebrates open upon the skin, it is quite probable that the above-mentioned contact between the Wolffian duct and ectoderm is an evidence of this old arrangement.

Rückert and Felix believe that the pronephros phylogenetically was originally composed of segmental tubules, which extended *directly from the abdominal cavity to the external skin*.

The Primary Kidney (Wolffian Body).—Shortly after the formation of the pronephros in animals where the pronephros is only rudimentary, the primary kidney develops.

The primary kidney lies retroperitoneal and to the side of the vertebrae. Its surface looks toward the celom; to the median side it borders on the aorta; dorsally is the posterior abdominal wall. It lies directly posterior to the pronephritic tubules near the following section of the excretory duct. Its lower end extends into the pelvis, its upper end up to the heart.

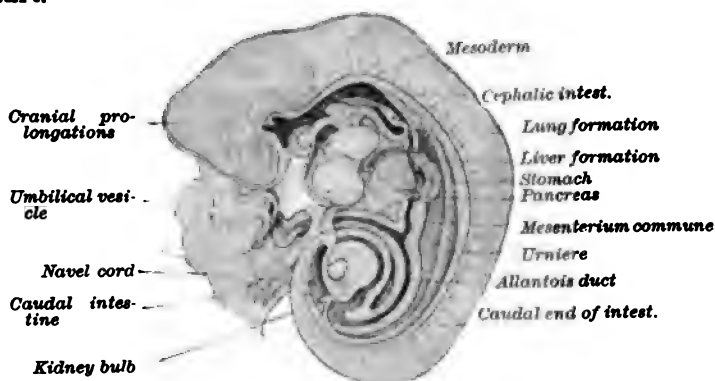


FIG. 32.—Human embryo, 5 millimetres long. Reconstruction. After His. Enlarged 10 X.

The development of the primary kidney tubules stands in close relation to the development of the primary segments (Figs. 31 and 33).

When the "primary segments" begin to be distinctly marked off from the "lateral plates," there develops at this point of separation a thin band, which for a certain time furnishes the connection between these two parts. This point where these consecutive bands, which appear like cell masses placed between the "primary segment" and the "lateral plate," appear, is called "the middle plate," and, because of its relation to the primary kidney tubules, *urnierenblastem*. The duct of the primary kidney is seen to make its way close to the connecting bands of the primary segments and lateral to them.

Each connecting band which forms a primary kidney tubule is called by Rückert nephrotom. The remaining portion of a "primary segment" forms the muscle plate (myotom) and furnishes the cell material for the skeletal tissue (sklerotom). While one end of the primary kidney tubule remains united to

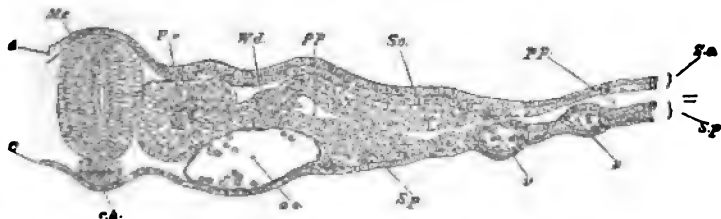


FIG. 33.—Transverse section through the dorsal region of an embryo chick of forty-five hours. After Balfour. The mesoderm is partly divided into primary segments (*P.v.*) and the lateral plate which includes the abdominal space (*p.p.*) *M.c.*, medullary canal; *P.v.*, primary segment; *S.o.*, body plate; *S.p.*, intestinal plate; *p.p.*, abdominal space; *c.h.*, chorda; *A*, ectoderm; *C*, entoderm; *a.o.*, aorta; *v*, blood vessels; *W.d.*, Wolffian duct.

the abdominal cavity, the other end unites with the excretory duct and opens into it. In this way the excretory duct of the primary kidney and the tubules of the primary kidney have developed separately and have united by secondary junction.

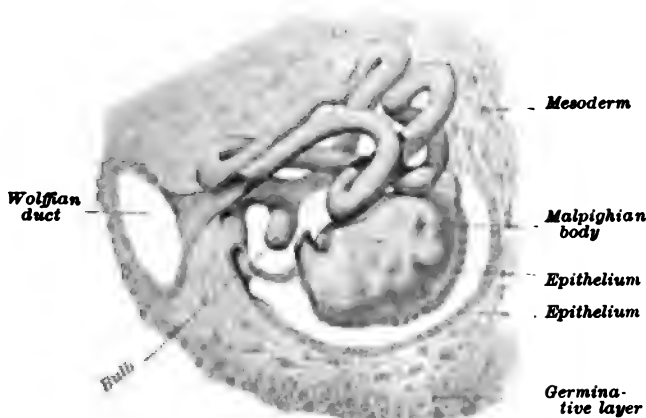


FIG. 34.—Urnere tubules, combined drawing. Human embryo, 10.3 millimetres long. After Kollmann.

Fig. 34 shows a primary kidney tubule, one of this series of excretory tubules of the form of twisted kidney tubules, of which the primary kidney is composed. All these structures are embedded in mesoderm. On the primary kidney lies the generative fold, which belongs to the peritoneum parietale,

which lies near the primary kidney. The peritoneum at this stage consists only of cells.

The upper half of the primary kidney is called "the cephalic" portion, the lower half is called "the caudal portion."

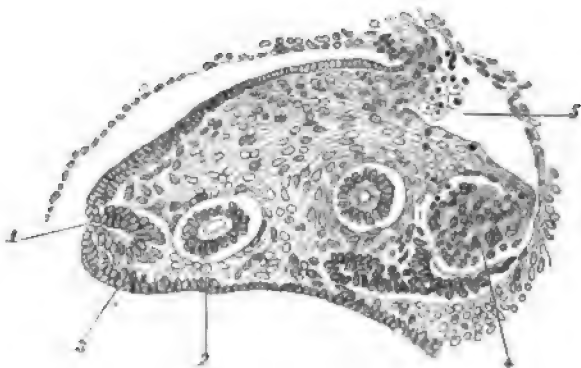


FIG. 35.—Transverse section through the upper end of the Wolffian body of a female embryo 12 millimetres long (Nagel). Formation of the duct of Müller. 1, duct of Müller; 2, Wolffian duct; 3, celom epithelium of the urniere; 4, glomerulus of the urniere; 5, blood vessel. Urniere=Wolffian body or primary kidney.

The Wolffian duct, which has extended downward through the mesoderm, empties into the cloaca, later into the sinus urogenitalis.

The Ducts of Müller.—The duct of Müller originates from



FIG. 36.—Posterior body end of a human embryo 5 millimetres long, with the caudal end of the intestine and the "caudal intestine" at their height of development. After His.

the celom epithelium on the outer side of the Wolffian body (Fig. 35). It begins as a short depression, open above, with a solid pointed end, and lies close to the Wolffian duct until it reaches the sinus urogenitalis. It is claimed by some that the

duct of Müller is formed partly by division from the Wolffian duct.

The duct of Müller and the Wolffian duct are surrounded by a common tissue structure and form the so-called "sexual band." Occasionally the process of inversion of the celom epithelium which forms the tube is repeated, and a short *accessory tube* is found, which, as a rule, consists of a more or less distinct fimbrian end in the neighborhood of the abdominal opening of the tube. These are to be distinguished from the accessory openings in the tubal canal itself. They may have occurred through an irregular inversion in the formation of the original funnel-shape depression (Fig. 35). The occurrence of openings further away in the course of the tube may

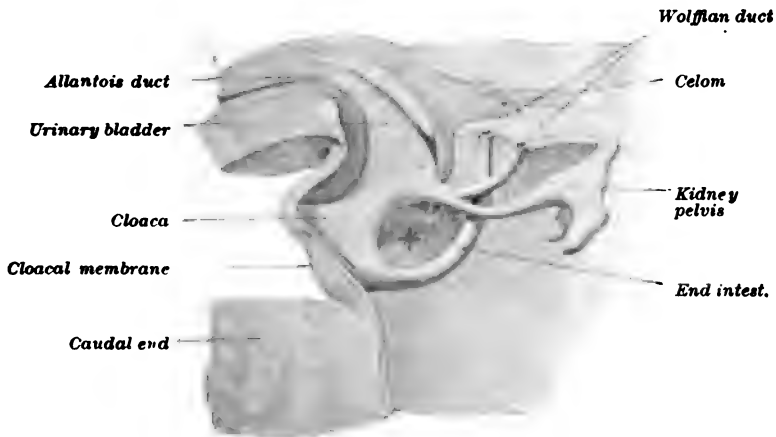


FIG. 37.—Pelvic end, human embryo 11.5 millimetres long (4½ weeks). After Keibel.
* Septum uro-rectale.

also be explained by changes in embryonal development, for it may be considered that a union between the epithelium of the duct of Müller and the epithelium of the Wolffian body occurs at one or more points—a fact which, perhaps correctly, has given rise to the theory of the development of the duct of Müller from the Wolffian duct. Then these accessory openings occur through subsequent thinning and perforation of the tube wall with prolapse of the mucous lining at these points. In the wall of such tubes thin areas are found which are protruded outward and permit the mucous membrane to be recognized.

The Kidney.—In Fig. 36 it is seen that at the end of the Wolffian duct an extension is formed from its posterior wall, the kidney bulb. From this comes the ureter.

It grows forward and is enclosed in a tissue rich in cells, the kidney mesenchym, which furnishes the connective-tissue elements of the kidney. The ureter dilates at its blind end and furnishes the pelvis of the kidney.

From it develop the kidney calices, and from these, through further development and division, the kidney tubules. According to certain authors, the canal system of the kidney is developed from the ureter according to the usual glandular growth. According to other authors, the kidney develops from two separate formations, the medullary substance with its collecting tubules from the ureter, the cortical substance and the twisted tubules and the loops of Henle from a special formation, the kidney "blastem." The latter view corresponds to the development of the primary kidney in so far as in the latter the excretory duct and the tubules develop independently and secondarily unite. Kollmann says that "the mesoderm (?) furnishes the excretory apparatus with its pronephros and the primary kidney, the testicle or ovary and their epithelia. In this apparatus there is found in two places *a minimal cell invasion* on the part of the adjoining layers: in the beginning during the formation of the Wolffian duct (from the ectoderm), and later on in the formation of the permanent kidney (from ectoderm). The majority of cells, especially the generative cells, which are intended for the propagation of the species, originate, however, from the mesoderm" (?).

(To be continued.)

THE WATERS OF SALSOMAGGIORE AND THEIR THERAPEUTIC ACTION IN THE DISEASES OF WOMEN.¹

BY

PROF. G. EMILIO CURÁTULO,

Professore pareggiato di Ostetricia e Ginecologia in the Royal University of Rome.

THE object of this short note is to make known to my colleagues the chemical composition of the waters of Salsomaggiore and their curative properties in certain diseases of women. From all Italy more than ten thousand patients frequent this bathing place, and from America and Russia

¹ Presented before the Chicago Gynecological Society, December 21, 1900.

invalids come to take advantage of these waters. Remarkable cures have been obtained in arthritis, rheumatism, gout, and chronic inflammation of the respiratory passages.

The waters of Salsomaggiore, a village five miles from Borgo San Donnino (a station on the main line between Milan and Bologna), were classed, on account of their chief chemical constituents, among the strongest of the *bromo-iodurated-saline* waters. But a recent analysis performed by Nasini, of the Royal University of Padova, has shown that these waters must also be considered the richest in lithium and strontium. Nasini, in his interesting work published in the *Gazzetta Chimica Italiana*, vol. xxx., 1900, says that from the amount of water that comes from one of the artesian wells 500 kilogrammes of lithium could be obtained daily.

These waters, therefore, contain a greater quantity of lithium than the hot springs of Wheel Clifford, near Redruth, in Cornwall, which have been quoted as the richest of this kind.

Nasini's analysis has also demonstrated that the waters of Salsomaggiore are richer in strontium than Dürkheim and Contrexéville's springs.

ANALYSIS

	Per kilogramme, gramme.	Per litre, gramme.
Chloride of sodium, NaCl.....	137.37824	153.99008
Chloride of lithium, LiCl.....	0.65544	0.78469
Chloride of ammonium, NH ₄ Cl.....	0.56821	0.68692
Chloride of calcium, CaCl ₂	14.13886	15.84798
Chloride of strontium, SrCl ₂	0.22807	0.25565
Chloride of magnesium, MgCl ₂	4.98198	0.58440
Chloride of ferrum, FeCl ₃	0.02918	0.03265
Chloride of aluminium, AlCl ₃	0.05249	0.05884
Chloride of manganese, MnCl ₂	0.00506	0.00567
Bromide of magnesium, MgBr ₂	0.27098	0.30374
Iodide of magnesium, MgI ₂	0.05916	0.06682
Borate of magnesium, MgBo ₂ O ₄	0.01036	0.01162
Bicarbonate of iron, Fe(HCO ₃) ₂	0.06944	0.07784
Sulphate of strontium, SrSO ₄	0.58825	0.60884
Silica.....	0.02055	0.02304
Amount of constituents.....	159.00572	178.23278

The *acqua madre* (die *Mutterlauge* of the Germans) is the water that remains after having extracted the most of chloride of sodium. It contains: iodine, 3.52 grammes; bromine, 5.30 grammes; lithium, 1.88 grammes; chloride of sodium, 44.25 grammes per litre, 33° Beaumé. It is used for inhalations, pulverizations, and baths.

The special forms of women's diseases that have been most successfully treated by these waters are as follows: chronic inflammations of uterine tissue and of the ovaries, exudates caused by peri- and parametritis, displacements of the uterus with old adhesions. Many cases of phlegmasia alba dolens and other forms of phlebitis have obtained complete recovery by means of these baths.

I hope that my foreign colleagues will appreciate the curative properties of the waters of Salsomaggiore, and that they may be the means of alleviating the human suffering for the benefit of which I have written these few lines.

CORRESPONDENCE.

INTERNATIONAL CONGRESS OF OBSTETRICS AND GYNECOLOGY.

TO THE EDITOR OF THE AMERICAN JOURNAL OF OBSTETRICS, ETC.

DEAR SIR:—At the last meeting of the International Congress of Obstetrics and Gynecology, held in Amsterdam, the time and place for the next meeting came up for discussion. Four proposals were made—from the Gynecological Society of London, from the Bulgarian government, from the municipality of Barcelona, also from the United States to come to Washington. The propositions not being in the day's order, it was decided to notify the voting members by letter, which in due course of time was done, with the result that eighty out of one hundred and ten members voted for London. Certain differences of opinion arising between the Obstetrical and the Gynecological societies of London, the plan to meet there was abandoned, and the founders were invited to a reunion in Paris in the early part of August last to decide upon a meeting place for the next International Congress. There were present Simpson, Martin, Jacobs, Treub, Mendes de Léon, Pestalozza, Dudley, D'Ott, Giles, Fargas, Jessett, Smiley, and La Torre. Previous to this meeting several American physicians had suggested Italy as a meeting place for the next Congress. La Torre consulted a number of members of the Society, including Prof. D'Ott, who assured him of their support in case Italy was mentioned. The president of the Italian society,

Prof. Pasquale, of Rome, gave his authority for the invitation. When the session was opened, Dr. Giles, secretary of the English National Committee, rose to explain why London was obliged to decline the Congress. The following discussion then took place, the accuracy of which is vouched for by La Torre:

LA TORRE.—I have the honor to present to the Assembly the following invitation: "The undersigned beg to ask in the name of the Italian Society of Obstetrics and Gynecology that the next Congress may be held in Italy.—*Mangiagalli, Pestalozza, La Torre.*"

MARTIN.—I am sorry that London cannot organize the Congress, but, since it has refused, we must respect its decision. We must thank the Italian colleagues for their courtesy in inviting the Congress, but, as we must consider the future of the Congress, its success and its life, I firmly believe that we cannot grant such a request. Many insurmountable obstacles arise against a Congress held in Italy, and, further, if the Congress meet in Italy it must die. Now, we must do all that we can to insure its life. It is to assure the prosperity of our reunions that I propose to you St. Petersburg. There we have the greatest obstetrician and gynecologist with whom I am acquainted, Prof. D'Ott, who will in two years' time open a most splendid gynecological clinic, and who will know how to organize a Congress, while in Italy it would die. We should, therefore, vote for St. Petersburg.

LA TORRE.—I ask for the floor, to reply to Prof. Martin. I thank him for the pleasant remarks he has made about the Italians. I greatly admire and esteem the merits of my friend D'Ott, but I must declare myself opposed to Martin in this matter. I do not understand what insurmountable obstacles there are to a meeting held in Italy, nor why the Congress should perish if it meet there. Will Prof. Martin kindly explain?

MARTIN.—I cannot publicly state the nature of these obstacles nor the reason why I thus speak. I can only repeat that if we vote for Italy we shall vote the death of the Congress. The Germans will not go to Italy, but they will go with enthusiasm to Russia. After Russia, Italy may have the Congress, but not now. I beg my colleague La Torre to withdraw his request for the present.

LA TORRE.—Pardon me, gentlemen, if I ask the floor for the third time, but you will understand that I cannot allow the words of Martin to pass. I defy Prof. Martin to explain

the obstacles which cannot be publicly mentioned; his reticence is an insinuation against which I protest with all my might, as I cannot allow any one to belittle the honor of my colleagues and of my country. I ask him, further, whether he speaks in his own name or in the name of all distinguished scientists when he says that they will not come to Italy. If the latter, let him present the documents authorizing him to speak in the name of all others. I do not withdraw my invitation, because I have presented it in the name of the Italian Obstetrical Society, and because, after the attacks of Martin and the engagements entered into with other foreign countries, our *amour-propre* is engaged. As to his remark that we should allow Russia to have the next Congress, asking ourselves for the following one, that is absurd. If Italy is not suitable now, it will not be suitable then; and if the Congress is to die in Italy three years hence, it were better for it to die speedily.

Jacobs, secretary of the association, who had previously promised to vote for Italy, now advised voting for Russia. D'Ott assured the association that he was much surprised at Martin's suggestion, having had no previous intimation that St. Petersburg would be suggested, and having therefore left Russia without having spoken to either colleagues or government in regard to the matter. Should St. Petersburg be chosen, he hoped that both would come to his assistance. Martin repeated: "London has declined, Germany cannot accept, Italy is death; there remains only Russia." Dudley spoke for his American colleagues, who all favored Italy; Mendes de Léon was of opinion that Martin should openly state the reasons for his objections to Italy; Pestalozza felt that, after the insult proffered to it, Italy could not yield. D'Ott, favoring a unanimous vote, begged La Torre to withdraw his invitation, a request which was refused. A secret ballot resulted in six votes for Italy and four for Russia.

After the session Prof. Martin congratulated La Torre on his victory, but again uttered his refrain that the Congress would perish: "Germans are tired of congresses, and they will not go to Italy; while in Russia the novelty of the country and the presence of the emperor at the festivals would attract every one. Besides, there is no one in Italy who can organize a Congress. The Congress will die, and the fault will be yours."

La Torre emphatically states that for long years he has been on friendly terms with Martin, so that his present indignation will be seen to have no personal element and to be due purely

to the unfairness and discourtesy shown to Italy. He objects to the mystery with which Martin surrounds the subject, refusing to answer the questions put to him, and contenting himself with the simple statements that Germany cannot have the Congress, that German gynecologists will not go to Italy, that grave obstacles exist to a meeting in Italy, that the Congress will die there, and that the Congress should meet in Russia, in spite of the fact that no invitation has been extended to it to do so.

La Torre further remarks that the Germans in Paris—Zweifel, Schultze, Amann, and Gottschalk—could not understand Martin's conduct. D'Ott expressed his regret at what had occurred. Jacobs, although he voted against Italy, considered Martin's language unsuitable. Later, however, D'Ott endeavored to persuade his French colleagues to come to Russia. Had Martin in the beginning simply urged the convenience and interest attaching to a Congress held at St. Petersburg, both La Torre and Pestalozza would have agreed to the proposition, as much to show gratitude for D'Ott's hospitality to the former when in Russia as to show their esteem for Martin. The violence of the unjustifiable attack on Italy has, however, left them no choice in the matter. They do not in the least blame D'Ott, merely considering him to have yielded to Martin's persuasions.

A further and serious complication arises from the fact that Morisani, who at first sided with his native colleagues, appears to have been won over by D'Ott's representations, and claims that Pinard, Mangiagalli, and Pestalozza will agree with him in the matter. This La Torre does not believe in regard to the two last. He condemns Morisani's action, on the ground that after a vote of the international colleagues has been taken it is impossible to retract. To do so would be tacitly to admit the truth of the insulting insinuations in regard to Italy. Moreover, Morisani has not the power to act alone. The Italian Congress of Gynecology and Obstetrics was in adult growth when other congresses were still in their infancy—why reject and discredit it now? If any one is guilty of killing the International Congress it is surely Martin, who endeavored to put an end to it in Amsterdam, and now tries to give it a final kick in Italy. Perhaps he will succeed. Should it be held in Italy many will now not attend, and equally certain is it that the same will be the case if it is held in Russia. It is no longer a mere question of courtesy to the Russians. Behind them

stands Martin, with whom there can be no exchange of courtesy. What is to be the final decision of the directors of the Congress? La Torre cannot answer this query, but he has felt it to be only right to give the foregoing explanation of the occurrences at the Paris meeting, to stand up for the honor of Italy and Italian science, and to plead with his colleagues to abandon trivialities and internecine wars when so much remains to be conquered in the world of science.

It may be added that members of the American Association, notably L. S. McMurtry, J. Whitridge Williams, Charles A. L. Reed, George J. Engelmann, and Palmer Dudley, the International Committee for America, decidedly favor Italy for the next meeting place, as against Russia, particularly under these exasperating circumstances. All appear to hold the opinion that Martin's conduct was high-handed and offensive and should not be countenanced. Dr. Reed, in addition to expressing his opposition to Martin's action, urges that Italy can be reached with ease and comfort, whereas a trip to St. Petersburg would be both difficult and expensive.

Engelmann thus briefly states the case as it is at present: "The founders have accepted the invitation extended by Italy. The Italian committee and the Italian Gynecological Society *can recall* their invitation; such recall must go to the secretary-general, who will then take steps to call for another vote, after stating the case to the founders. Neither Morisani nor the Italian committee entire or unanimous have a right to trade with Russia or yield the meeting to Russia. It would be an indignity, a slap in the face, for the men who voted and represented the founders by such vote. The American committee should state its objections to the complete ignoring of the decision of the founders as expressed by their votes in their meeting in Paris, August 2, 1900."

I consider that it would be a great mistake to yield to Martin's suggestion and lend our assistance to any such high-handed over-riding of the parliamentary rules that should govern a scientific body. I consider La Torre to be both fair and very generous in his statements. We, as a committee from this country, hope that the International Secretary, Dr. Jacobs, of Brussels, will lend every effort toward securing a successful meeting in Italy.

A. PALMER DUDLEY,
*Secretary of the American
National Committee.*

678 MADISON AVENUE,
January 14, 1901.

TRANSACTIONS OF THE CHICAGO
GYNECOLOGICAL SOCIETY.

Stated Meeting, December 21, 1900.

CHARLES S. BACON, M.D., *in the Chair.*

EXTRAUTERINE PREGNANCY.

DR. HENRY BANGA.—I wish to present a specimen of unruptured extrauterine pregnancy which I obtained by a laparotomy done yesterday morning. The interesting feature about the specimen is that you will see the insertion of the ovum in the tube very plainly where there is now found an adherent coagulum. Orthmann, an assistant of Martin, was the first to call attention to the fact that the presence of such an adherent coagulum permitted a diagnosis of extrauterine pregnancy. This was referred to at an earlier period in the history of recognizing cases of extrauterine pregnancy. We have other means now that will enable us to make a diagnosis of this condition. As to an accurate diagnosis, the coagulum, under all circumstances, offers the best specimen for microscopical examination, because we will always find, according to the statement of Martin, some fetal structure which explains its origin, villi, and deciduous cells. This is the uterine end of the tube, and then there begins, half an inch or an inch away from the uterus, the swelling of the tube, a hematosalpinx, the fimbriated end of the tube being closed. There was a communication with the sac formed by the ovary, so that we may say that there was a tubo-ovarian sac. It may be that the sac in the ovary was originally a cyst, and that, perhaps through pressure from the tube, a communication was established. I say this for the reason that the patient told me, as well as her husband, that she always had had a little pain on the right side, and during sexual intercourse she felt a sharp pain, so that I think the possibility exists. I shall keep the specimen for further investigation in that respect. There was undoubtedly a cyst, and through pressure from the tube the cyst wall broke, and then the blood filled the cyst. When we opened it, it contained thick, bloody fluid, but no serous fluid, as we would expect to find in a cyst; nevertheless I think that that was the actual condition that brought about the communication between the enlarged ovary and the tube.

The history was this: The patient missed her menstrual period on the 8th of November. It appeared eight days later. A few days before the 8th of November she experienced a pain in her right side. It was quite a sharp pain. Another point of which I have previously spoken is that the pain she

experienced during cohabitation was not spontaneous, although she recognized this pain, during the days when she expected the menstrual flow, as something new. About fourteen days after the time that she expected the menstrual flow she began to pass blood, and this kept on during the latter part of November into December almost continuously up to the time of the operation. She did not see any pieces of decidua. The pain in the side gradually increased, it being described by her as of a colicky character. All at once she would be taken with a sharp bearing-down pain, and then there would be a little interval. She had no subjective symptoms of pregnancy, no other sickness, which is the more remarkable. She carried one child to full term, and had a miscarriage at the fourth month some three years ago. When I saw her she presented a very healthy appearance. She had rosy cheeks and red lips; there were no signs of exsanguination. She complained of the flow and pain in her right side. Upon examination I found the uterus presenting the condition we would expect of a uterus pregnant the first month or two—namely, that it was a little enlarged and somewhat soft. It was not noticeably displaced, but was pushed over a little to the left side. In the region of the broad ligament I found some resistance, which was very tender to the touch, so much so that I did not care to make at the first examination a bimanual exploration. I then thought from the history and what I had found that it might be a case of unruptured extrauterine pregnancy. I saw the woman then every day, and was told that the bloody discharge continued, that the pains were sharp, lancinating, bearing-down, and distinctly referable to the right side. These pains continued, so that for a few nights sleep was disturbed and it became necessary to give a suppository. Ten days afterward I examined her again and found there was a decided increase in the size of the mass that I had felt first. I could easily palpate it bimanually. The uterus was pushed over to the other side. I now decided that I had to do with an extrauterine pregnancy, as yet unruptured, but increasing in size, so that the possibility of an unexpected and untimely rupture seemed possible. I advised the patient to submit to an operation, which she did, and yesterday morning I operated and removed this specimen.

I wish to point out in connection with the history of the case a point which, in my experience, is characteristic—namely, the one-sided pain beginning very early, and its persistence up to the time of the operation. I take it that the persistence of the one-sided pain, the freedom of any accumulation around the uterus, also the fact that Douglas' cul-de-sac was perfectly free and the uterus movable, pointed to the unruptured condition of the extrauterine pregnancy.

DR. EMIL RIES.—I should like to ask Dr. Banga whether a corpus luteum was found in the other ovary.

DR. BANGA.—Yes. There was quite a clot of blood in the left ovary.

DR. RIES.—That is an interesting point, because it makes it look like a case of internal migration of the ovary. As the ovum could not have passed from the left ovary into the right tube through the abdomen, the right tube being adherent to the ovarian sac, the ovum must have gone from the left ovary through the left tube and through the uterus into the right tube.

All the cases of internal migration of the ovary that have been described have been proved fallacious, so that this might prove to be the first true case of internal migration of the ovum, and the specimen deserves very careful examination.

CYSTS IN THE FALLOPIAN TUBE.

DR. ROBERT DODDS.—This specimen is not particularly important, except as it illustrates that cysts that are supposed to be in the ovary or tube empty themselves periodically through the uterus. I have two cases on hand at present, one patient being the wife of a colleague, who has a cyst in the right ovarian region which empties every three months.

In the case of the specimen I show you, following each menstrual period there was a discharge of perhaps half a pint of foul-smelling material. There was great pain accompanying menstruation. The inflammation extended over a period of fifteen years, the pain gradually getting worse and worse. Four days ago the patient submitted to an operation, with the result that this specimen was removed. It was attached posteriorly to the uterus away down to the cul-de-sac of Douglas, being attached really to the rectum. I peeled it out without rupturing it, closed the wound, found a mass of fluid had gotten out, looked at the sac and saw it was intact, all of the fluid having come out through the tube. The only peculiarity is the patulous condition of the tube in the ovarian cyst and the possibility of these sacs emptying through the uterus.

DR. FRANK A. STAHL.—What was your treatment in this case? Was there spontaneous reduction of the cyst, or was it due to treatment on your part?

DR. DODDS.—I had reduced this one; I could reduce it one-fourth by pressure, and later on a little fluid would come out. Three months ago I had another case of cyst of the same nature that I reduced entirely by massage and by pressure of the cyst, so that in the course of three or four weeks it entirely disappeared. I used glycerin tampons and ichthyol, the patient being put in the knee-chest position, with pressure forward and manipulations. I have had four or five cases, and this is the only specimen I have removed intact, showing the patulous canal from the ovary into the tube and out. It discharged every month.

DR. FRANK A. STAHL.—I was pleased to hear of Dr. Dodds' success with the glycerin and ichthyol tampons in treating those cysts. I, too, have been trying this treatment in two such cases, one of which is cured.

The first patient came to the office with every indication of having undergone an embryonal abortion. Inquiry yielded that she had lost a small, round, sac-like mass. Her condition was indicative of a four weeks' abortion. Showing her such a four weeks' ovum, both husband and wife immediately recognized a similarity, both declaring it was just like that. During the digital examination I found a soft cyst on the left side, about the size of a regulation baseball. With the curette I scraped a piece of the membrane from the cavity; microscopical examination later showed it to be deciduous. Though it seemed the patient would have to undergo an operation, I thought I would try what such tampons would accomplish. At the end of three weeks the cyst had disappeared, and to-day, three months after, I find an ovary apparently normal and the lady enjoying perfect health.

In the second case the patient was sitting on a stone threshold one evening, and in rising she was seized with every symptom of what appeared to be a ruptured cyst or a ruptured extrauterine pregnancy. When I was called she had abdominal pains, a bloody uterine discharge, and so forth. I got her over the acute stage of that condition, intending to treat her with glycerin and ichthyol tampons, having previously submitted to the relatives the alternative of immediate operation or the likely favorable tampon treatment. The acute condition, I think, was due to a rupture of some tissue, producing these reflex manifestations from the presence of an ovarian serous cyst, probably from the cold of the stone and the pressure in rising. The exudate in the pelvis was of such a nature that I could distinctly outline both sides. I found on the right side absolutely no resistance, indicating it was free. On the left side I found a tumor which ranged half-way down in the pelvis between the superior strait and the pelvic floor, extending up to a line almost with the umbilicus. That was four months ago. Now there is no loss in the plane of the vaginal roof, and the upper line seems to be two fingers' breadth below the umbilicus. I have been using the glycerin and ichthyol tampon treatment, and notice that the tumor under this treatment continues to diminish in size. The patient is up, about, a picture of health, and claims if I had not told her that she had such a condition she would think that she is perfectly well. The patient is a very stout woman, and hesitates to undergo an operation if she can be cured by this method of treatment. The treatment is practical and affords great comfort to the patient; of course, should indications arise, operation would be immediately resorted to. I forgot to state that this lady is married some six years without any history of pregnancy.

DR. WATKINS —I would like to ask Dr. Stahl how he would exclude tubo-abdominal abortion in that case. Is it not possible that this mass was a hematoma, and that the diminution in size of the cyst was due to the resulting absorption? I offer that as a suggestion.

DR. STAHL.—I am quite sure from the local and general signs that there was no tubo-abdominal abortion. There might be a question at first sight in the first case as regards tubal pregnancy, but examination ruled that out. This was substantiated by the subsequent treatment. In the second case there could be no doubt as to its not being a hematoma, because it was a soft cyst, which has been considerably reduced in size by the treatment I have mentioned. It gives the exact clinical signs of a large sero-ovarian cyst. There was no question about the intrauterine pregnancy in the first case.

PUS TUBES AND APPENDICITIS.

DR. EMIL RIES.—I have a specimen to show on account of its rarity. Here you see a two-horned uterus. You will observe the insertion of the tube is high up on the shoulder of the uterus on both sides. This specimen was removed two months ago from a patient who had pus tubes and appendicitis. The patient made a good recovery. There is nothing remarkable about the specimen other than the condition of the uterus.

As recent developments in our knowledge of malformations of the uterus have necessitated very careful microscopical examinations of malformed uteri, and as I intend to make a careful microscopical examination in this case, I wanted to show the specimen before it is mutilated for the purpose of the microscopical examination.

NEUROSIS CURED BY REMOVAL OF DISEASED APPENDAGES.

DR. PALMER FINDLEY.—I have three specimens to show, through the kindness of Dr. Webster. The first specimen is of interest because of its clinical bearings. The patient was 37 years of age and perfectly well up to ten years ago, when she had two attacks of diphtheria, one closely following the other, and since that time she has suffered from pain over the right eye. The pain seemed to localize itself in the region of the antrum of Highmore on the same side, and radiated down to the back of the neck. That is all the pain she seemed to have had throughout these ten years. Naturally she became more and more nervous, and suffered from palpitation of the heart and dyspnea. She fell into the hands of one physician after another, and finally was admitted to the Presbyterian Hospital. Dr. Bevan examined her with reference to the pain in the region of the antrum of Highmore, and said there was nothing there to account for it or to warrant surgical interference. The patient then went to the service of Dr. Billings, who made a careful general examination and found nothing. He considered her a neurasthenic. The patient was later referred to Dr. Webster for a pelvic examination. This examination revealed a large, retroverted, firmly fixed or adherent uterus, and both appendages were firmly adherent to the bowel. On the right side was a medium-sized hydrosalpinx. It was determined that an exploratory incision should be made. There was not a single pelvic symptom. She menstruated regu-

larly, but did not menstruate the full amount or usual length of time—only two or three days. She had no intermenstrual discharge, no pain, but suffered from constipation and frequent urination. On making an exploratory incision the uterus was found firmly fixed to the rectum in a retroverted position, and the adhesions were so strong that they could only be freed by scissors. On the right side there was a hydrosalpinx firmly matted together by adhesions and closely adherent to the bowel. The left side was slightly enlarged, which, together with the ovary, was adherent to the bowel. It was decided to remove the entire organ. After removal of the uterus a number of polypi were found inside the organ and there was a diffuse endometritis.

The specimen, together with the history, is of interest in that, in spite of the firm adhesions and the position of the uterus, the matting together of the appendages, the presence of hydrosalpinx, there were absolutely no pressure symptoms, but there were general disturbances which might possibly have existed as a remote consequence of pelvic inflammation. Menstruation was normal, although the amount was perhaps a little less than should be. To find a diffuse endometritis and a number of polypi without clinical evidence is rather unusual. This case illustrates that an endometritis can take place, and even polypi may exist, without an intermenstrual discharge or menstrual discharge. The patient was retained in the hospital longer than the accustomed time, in order to note the effects the endometritis and polypi might have had upon her general condition. After the removal of the uterus she was relieved from pain over the eye, in the neck, and in the region of the antrum of Highmore. She was no longer nervous, and presented every prospect of having been restored to health.

CYSTIC DEGENERATION OF THE CERVIX.

This specimen is interesting because of the pathological findings. The patient, 23 years of age, enjoyed perfect health until seven months ago. She flowed profusely at the menstrual period, and during the last month constantly throughout the intermenstrual period. She was admitted to the service of Dr. Webster in the Presbyterian Hospital. After an anesthetic was administered the cervical canal was dilated, and it was noted that there were cysts high up in the cervical canal, just below the internal os, about the size of the end of one's thumb, and attached with a broad base to the cervix. Dr. Webster split the cervix, both in front and behind, in the median line, exposed the cysts, and amputated the cervix above them. The cystic degeneration on the right side extended throughout the whole muscular wall of the cervix to the vaginal surface. On the other side the degenerative process did not extend so deeply. On the side which was less affected the cystic degeneration only extends a trifle into the musculature. The cysts are lined with epithelium typical of the cervical glands, and I take them to be retention cysts. The whole inside of the cavity of the uterus is lined by a fungus-

like growth. The mucous membrane is thick and very soft. It will easily scrape off. There is no proliferation of the epithelium beyond the basement membrane, but in the lumen of the glands there are two or more layers here and there, which would cause one to suspect malignant degeneration, although I do not believe the disease is malignant in this case.

DR. EFFA V. DAVIS (by invitation of Dr. Findley) presented a

RUPTURED UTERUS.

A woman of middle age, who had had three normal births, and one (the first) a forceps delivery, fell in labor early in the morning and was under the care of a midwife. The midwife recognized that there was something wrong, and, thinking she had a face presentation, called a physician at 10 o'clock in the morning. A physician examined the case, and it is stated that he said everything was all right, and left. The woman was in severe labor all day, and about 9 o'clock in the evening a second physician was called, who deemed it best to apply forceps and make an attempt to deliver the child. He did so and failed. A third physician was called in, who attempted version. The amniotic sac ruptured about 2 o'clock in the afternoon; forceps were applied at 10 o'clock in the evening, and version was attempted at 11 or 12 o'clock. I was summoned to the case about 1 o'clock, and examined the patient about 2 and found her in a pitiable condition. She was having vigorous pains, but pulse weak. There was a discharge from the vulva and great edema of the vagina. The abdomen showed very marked tympanites. The patient was in such distress and seemingly in so much pain that an external examination was difficult to make. I advised that she be sent immediately to the hospital, with the idea of performing a Cesarean section. She was taken to the hospital within an hour, when Dr. Webster saw the case with me. Patient at that time showed marked signs of shock, pulse being 140, attended with considerable fever. The case was so urgent that we proceeded immediately to prepare the patient for an operation. I neglected to say in my previous remarks that there was a face presentation from the beginning. When I examined the patient I detected the face presenting at the brim of the pelvis. There was marked edema of the parts. The traction efforts that had been made to deliver the child were very great, and it was with difficulty that we could make out the chin posteriorly. Both physicians said it was anterior before version had been attempted. Dr. Webster in his vaginal examination failed to find the presenting part at all. I believe the head had receded; the uterus was down in front, was small and retracted. So far as I could determine, after starting with the patient to the hospital she had no uterine contractions whatever, except tonic contraction of the uterus, which was discovered by abdominal palpation.

The abdomen was opened by Dr. Webster, and the child and

placenta and a little blood found in the abdominal cavity, having escaped from a rent in the left side of the uterus. The child was living at 9 o'clock in the evening, but no heart sounds could be heard a short time after that, and I believe it was dead when I first saw the case, as was stated by the attending physicians. The patient died sixteen hours after the operation.

The perineum and other parts were so badly lacerated that it was not thought wise to undertake stitching. The woman was in a critical state, and we were afraid she would die before the operation was completed. That was the principal reason, I believe, for removing the uterus. Furthermore, the parts were so badly lacerated by the application of forceps by the previous physician, and attempts at version, that we feared the possibility of sepsis if the uterus was left.

DR. PALMER FINDLEY.—I will pass the specimen around. The placenta is not in the uterus. You will find a rent on the left side, including the vagina, and extending well up on the side of the uterus. Rupture occurred between the layers of the broad ligament, and later through the broad ligament into the peritoneal cavity. The lower extremities of the child remained in the uterus. The child weighed a little more than 10 pounds and was 55 centimetres long.

DR. FRANK A. STAHL.—This is an interesting case and contains quite a few suggestions. Here is a clean-cut rupture of the uterus; it looks as though from a uterus capable at the time of labor of vigorous and strong contractive power, also as though there had been no serious hemorrhage. Dr. Findley states there was little hemorrhage. She was in profound shock at the time of the operation. In such a case would it not have been better to simply celiotomize, remove the fetus, stitch up the laceration—viz., a simple elytrorrhaphy—and close the abdomen, rather than add to the already profoundly lowered resistance the further shock of the serious Porro?

With a patient in such profound shock and the general condition bad, does not removal of such a uterus, apparently in clean though lacerated condition, but add to the chances of the fatal result? Among others, Leopold has shown very favorable results in many similar cases by simply leaving the uterus alone and stitching up the rent. Another suggestion this case offers, and that is the sad obstetrics this case presents. Had the first or second attendant but turned and extracted it would have saved the woman, possibly the child. These are not rare cases. Whose fault is it? Can it be that the teachers of obstetrics enthuse to too serious heights when speaking of a Cesarean section? Would it not be better that greater stress be laid upon the nobler podalic version and extraction?

Its great simplicity of performance and beauty of result justify its position as the operation of first resort in obstetrical difficulties, and raise it to the high dignity of being the noblest operation in the whole realm of operative obstetrics.

DR. JOSEPH B. DE LEE.—A question suggested itself to me while Dr. Davis was speaking—namely, the time at which the rupture took place. If I understood her rightly, she said that the woman was having strong pains until just after she started to the hospital, when the pains ceased and the woman was brought to the hospital in collapse. To my mind, the rupture took place at the time the woman was carried from the bed to the ambulance, or from the jolting of the ambulance. I have a particular reason for mentioning this, because only four months ago I saw a similar case. A midwife had had charge of a case of labor in which there was a shoulder presentation. She allowed the patient to be neglected for some time. Then one physician after another saw her. The woman was sent to the hospital in an ambulance, and the physician who accompanied the patient to the hospital asserted that the pulse was good and that the pains were strong when they started, but on arrival at the hospital the head nurse, who received the patient, stated that the woman was in collapse. She had a pulse of 140 to 180, and the couch was covered with blood. There is no doubt in my mind that this case had threatened rupture at the start of the journey, and that the rupture was completed during the journey; and the case reported comes under the same category, I believe. Of course, I do not know positively, because there are many details with which I am not familiar. But it was suggested by the case which I saw myself. In these cases of neglected labor I believe it would be better to operate or do what is necessary at the house, in spite of the fact that there are disadvantages in operating under unfavorable surroundings.

DR. EFFA V. DAVIS.—The operation consumed forty-five minutes. The broad ligament was very much involved in this tear; the rupture evidently began on the left side and extended into the broad ligament, and I believe that was why the hemorrhage was so slight. The patient was in shock when I first saw her, pulse being 140. I think, as Dr. De Lee suggested, that the child escaped into the abdominal cavity during the ride to the hospital, but the tear in the uterus had probably begun much earlier. The woman did not seem to be in a very much worse state at the hospital than she had been at home, except that her skin seemed to be clammy and the signs of shock were increased a little. The labor pains began to decrease before we moved her, and I think they ceased on the way to the hospital. It is hard to say whether she had uterine contractions or not, because she moaned in a helpless sort of manner nearly all the time. As the patient did not speak English, I had little opportunity of asking her questions and of knowing whether she was having regular uterine contractions or not. I, however, made the remark to one of the physicians in charge, before we started, that her pains had subsided to a certain degree.

As to the question of removing the uterus, the ragged condition of the rent, together with the bruised and edematous

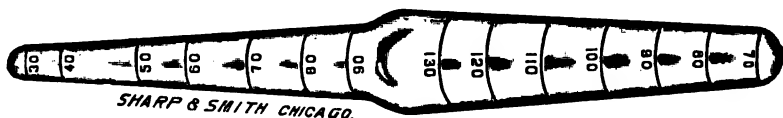
condition of the lower uterine segment, made removal a safer proceeding than packing or suturing, and it scarcely consumed more time.

The danger of sepsis in such a case was greatly lessened by the complete removal of the organ, as I believe infection would have travelled up into the broad ligament rapidly.

DR. CHARLES S. BACON exhibited

A CONICAL RECTAL DILATOR.

Some months ago it occurred to me that a simple, economical, aseptic rectal dilator would be desirable, and, finding nothing on the market, I had constructed for me by Messrs. Sharp & Smith the instrument which I present to you this evening. It is, as you see, a double cone made of metal so that it can be boiled. Its entire length is 28 centimetres. Each cone is about 12 centimetres long, and in the intervening 4 centimetres the large one is tapered to unite with the small one.



The circumference of the small end of the small cone is 30 millimetres, and the large end of the small cone is 90 millimetres, making an increase in the circumference of 60 millimetres in the length of 12 centimetres, or an average increase in circumference of 5 millimetres per centimetre of length.

The circumference of the small end of the large cone is 70 millimetres, and the large end of the large cone is 130 millimetres, making the same taper to the large cone as to the small one. Fine circumferential lines at intervals indicate the size.

With this instrument a stricture of less than 70 or 80 millimetres calibre, located within 10 or 12 centimetres of the anus, can be easily reached, while a stricture, a half larger, near the anus or within 5 or 6 centimetres, is of course under control.

A rectal specialist who has a large assortment of dilators will find no particular value in this instrument, but the ordinary gynecologist and general practitioner who has but few cases of stricture each year, or one who wishes an instrument for the patient to use himself, will appreciate its advantages.

It can be sterilized by boiling, and it can be used for all strictures larger than those that can be treated with a urethral sound. It has the same advantage over a branched dilator that the round uterine dilators of Hegar have over the opening dilator—viz., it will not rupture the tube.

In using a conical dilator one soon learns to dilate discontinuously. The dilator is pushed into the stricture for one to

two seconds and then slightly withdrawn for half a minute, to be pushed a little further next time. In this way, with patience, the best results are achieved with the minimum of pain.

DR. C. S. BACON reported a

FATAL CASE OF PUERPERAL FEVER THAT LED TO A MALPRACTICE SUIT.¹

DR. FRANK A. STAHL.—In connection with the medico-legal case reported by Dr. Bacon, he will find an opinion bearing on the subject by Döderlein, of Tübingen, expressed at the German Gynecological Congress, 1899. Döderlein holds that the question of judicial (legal) responsibility is certainly very important. In such a case he took the ground that of a personal responsibility on the part of the defendant midwife there could be no question, since we present no positive disinfecting methods.

DR. KARL O. THIENHAUS, of Milwaukee, Wis.—I would like to say that curettement of the uterus in the puerperal state is attended with considerable danger. When the uterus is already infected, we should try to remove the débris from the uterine cavity by other means than the use of the curette, because when we use the curette we are apt to make other wounds and to open already closed-up blood vessels, thereby causing the infection to spread. When the physician makes an internal examination in cases of labor, he should use sterilized india-rubber gloves, after having previously sterilized his hands and rendered them as aseptic as possible. Furthermore, when he thinks that pieces of placenta remaining in the cavity are a source of fever to the patient, and he intends to remove them, he should protect his fingers by sterilized rubber gloves, thereby avoiding the carrying of highly infectious material into the pores and outlets of sebaceous glands of his hands. A physician's motto should always be what English surgeons—as, for instance, Lawson Tait—proposed many years ago: Keep your hands in a relatively aseptic state.

DR. J. CLARENCE WEBSTER reported a

CESAREAN SECTION ON A GIRL THIRTEEN YEARS OLD.²

DR. CHARLES S. BACON.—The chief interest in this case is not in the operation itself, but in the indication for the operation. There need be no discussion over the technique, for that was undoubtedly correct, as proved by the result, the good recovery of the patient. The indication for the operation was, however, somewhat unique. The combination of antepartum hemorrhage with a narrow obstetrical canal was, I understand, the indication. Had it not been for the hemorrhage the section would not have been done. The bony pelvis while somewhat contracted, was not so small as to prevent the ex-

¹ See original article, p. 154.

² See original article, p. 158.

traction or delivery of a small child 33 weeks old. The measurement shows that the size of the inlet places the pelvis about the middle of the first class of contracted pelves. While no mention is made of the size of the outlet, it is evident that the pelvis no longer belonged to the infantile type with funnel shape. The vagina was narrow, but not from pathological stricture; hence it was probably distensible and would have enlarged in a normal labor. The contraction of the pelvis and vagina alone, therefore, would not have called for a section. Had haste in the delivery not been required on account of the hemorrhage, the vagina could have been dilated by a colpeurynter and the cervix, if necessary, by a metreurynter, until the correction of the faulty position could have been quietly effected. The hemorrhage due to placenta previa—i.e., to the implantation of the placenta on the lower uterine segment—was then the real indication for the operation.

The judgment of the operator must decide as to the importance of the hemorrhage and the urgency of the indication. We, of course, must accept Dr. Webster's statement when he says that the patient's condition was serious and demanded immediate action. In regard to the action decided upon, we are required, however, to ask the same question which he, no doubt, asked himself afterward, as every one reviews and criticises his own work, namely: Was no other procedure less serious possible in this case? As bearing upon this point. I would like to ask: What was the effect of the tampon that Dr. Webster says was put into the vagina and cervix after his internal examination, to control the hemorrhage? If this tampon stopped the bleeding, then slow dilatation was not impossible, for the tampon itself would have acted to dilate the obstetrical canal.

If the tampon did not stop the bleeding, it would not follow that hemorrhage could not have been controlled and dilatation effected in another way. It seems to me that this was a case especially adapted to the use of the intrauterine bag. The balloon of Champetier de Ribes, or any of its modifications, would, I believe, have effectively controlled the hemorrhage, and at the same time have dilated the obstetrical canal, so that the subsequent manipulation of version could have been performed. It certainly would have been possible to introduce the bag into the uterus with a suitable forceps. It has been the experience of all who have used this method of treating placenta previa, from Schauta and Maurer to the present time, that it is efficient in controlling hemorrhage. There could have been no danger of rupture of the uterus, because the patient was a primipara, and there could have been no chronic weakening of the uterus resulting from previous severe labors, and the labor had been in progress but a short time with apparently no very severe pains.

I am well aware of the fact that no report of a case can present to us the condition as forcibly as the presence of the patient, and admit that I may be mistaken in the nature of the

case reported to-night. From the report as given, however, it seems to me that the very procedure that was especially applicable, and promised most, was substituted by a very much more serious operation, and I must, therefore, hold that the section was not indicated, unless Dr. Webster can show that metreurysis was not applicable here.

DR. J. B. DE LEE.—The case reported by Dr. Webster is unique in many respects. The necessity for the performance of Cesarean section in a girl of thirteen makes it worthy of record, though this latter fact did not give the indication for the operation.

There is hardly any doubt that if in this case the presentation had been either head or breech, no abdominal operation would have been necessary, as there was no mechanical disproportion between the fetus and the pelvis. Then, too, the cause of the hemorrhage could have been reached and a Cesarean section would not have been thought of.

Embryotomy of a fetus in transverse presentation, high up in the false pelvis, is a formidable operation, and certainly when one has to work at a distance of eight to ten inches, through a narrow vagina, and in the presence of hemorrhage.

By metreurysis for the placenta previa, hemorrhage might, perhaps, have been checked and time given to prepare the parts for delivery, but the condition of the patient forbade delay.

I have several times performed embryotomy in fully developed women, at term, under conditions of retraction of the uterus and inaccessibility of the child, and the difficulties encountered were such that a Cesarean section seemed to me the less difficult operation by far, though it would have been the more dangerous. Here time is an element, and, under the circumstances of the case, the Cesarean section, to my mind, was the quicker operation.

In contrasting the difficulties of operating from below and from above, the specialized technical skill of the operator will have weight this way or that; and since the estimation of these difficulties is only possible to one present before them, and, to my mind, is not discussable from these benches, we may justly leave the decision of which was the proper route to attack these certainly discouraging conditions to the good judgment of Dr. Webster, and heartily congratulate him on the successful outcome of the case.

DR. FRANK A. STAHL.—Just why this child was Cesareanized has not been made clear by the doctor. He tells us she was in the maternity under direct supervision; there is no history of maternal deformity; at her age a 11.2 centimetre conjugate is indicative of a normal pelvis; the fetus was not deformed and of but eight months' development, therefore elastic and easily adaptable to the parturient canal; added to these qualities was the additional feature of the marked elasticity of the parturient tissues of the youthful mother; the bag of waters ruptured with the fetus in a transverse presentation

(position?). So far as the smallness of the vaginal canal is concerned, as Dr. De Lee has mentioned, if it were desired, dilatation either with hand, bag, or incisions could have been confided in, the greater relaxing qualities of so youthful tissues increasing this confidence. No attempt was made to turn. From the doctor's own words I am forced to believe that, with half an ounce of chloroform, five minutes after anesthesia that child-mother could have been delivered of her fetus by turning and extraction; and most probably, if the fetus were living at the start, it would have been delivered in a viable state, notwithstanding the cord was prolapsed.

I do not know why, but there does linger in the minds of not a few gentlemen the opinion that in child labors—that is, labors say before 16—the knife should bear a closer proximity to the obstetrical reach than it does in those of more mature labors. I fail to find any good cause in Nature for this opinion.

In a symphyseotomy performed but a short time ago, this opinion seems very prominently reflected. It was in a primipara 18 years of age with a neonatus of but six pounds. This case was recently instanced as a laudable example of obstetrical judgment for a symphyseotomy. Had this case occurred while riding in a freight car, or lost in the woods like Hester, I think there would have been no other history than that of the ordinary discomforts of a normal labor.

My first case of child labor was one conducted by me in the Munich Maternity. I was surprised how little expression of pain, etc., the child-parturient gave vent to. Instead of delay there seemed to be a more favorable progress.

In another case, R., age 15, the labor was short and without much discomfort; the baby was a vigorous, well-formed boy.

In a child labor with normal maternal and fetal developments, with an eight-months fetus, the conditions seem to me favoring a normal labor, or, at the most, an assisted labor through the natural passages. I wish the doctor could explain the indications for his Cesarean section.

DR. HENRY F. LEWIS.—While it would hardly be proper to indorse Cesarean section in this case from the anatomical condition alone, that is to say, the contraction of the pelvis, yet the other serious conditions present seem to me to be ample justification for the course pursued by Dr. Webster. To be sure, the pelvis is not small for a girl of 13, perhaps even it is a trifle larger than normal, but it would surely be a justo-minor pelvis in an adult. As far as would be known, the fetal head which was to come out of that pelvis was as large as normal for a fetus of the given period of gestation.

The problem presented to the operator was that of a neglected transverse presentation, complicated with a justo-minor pelvis, contracted and rigid soft parts and hemorrhage. There was evidently no chance to perform podalic version, since the hand could not reach the uterus through the narrow parturient canal. The same reason forbade embryulcia, although the

child was dead. Waiting for the os and vagina to become dilated from the effects of the tampon would have been erroneous on account of the retracted uterus and consequent danger of rupture; on account of the alarming hemorrhage, which might continue to a dangerous degree about the tampons; and on account of the condition of shock as shown by the pulse.

The operator very properly ignored precedent, took the bull by the horns, and terminated the case in the easiest and quickest way.

DR. WEBSTER.—I desire again to emphasize the fact that the Cesarean operation was indicated by the loss of blood due to placenta previa, which was increased when vaginal manipulations were undertaken. The fetus being transverse and so high as not to be reached, the upper uterine segment being firmly retracted upon it, I consider that the risk to the lower uterine segment would be too great to warrant the introduction of a ta upon or a Champetier de Ribes bag for several hours in order to dilate the cervix. Even after such procedure embryotomy would be required, and the danger of further hemorrhage as a result of the manipulations would not be diminished. Moreover, the operation could then only be carried out with great difficulty as a result of the relationship of the fetus to the uterus, and because of the small bony canal and vagina. The small size of the soft passage was a very important feature in the case. It would have required a very considerable amount of dilatation, and this could not have been safely carried out in a short time.

A paper by PROF. G. EMILIO CURÁTULO, of Rome, Honorary Fellow of the Society, entitled

THE WATERS OF SALSOMAGGIORE AND THEIR THERAPEUTIC ACTION IN THE DISEASES OF WOMEN,¹

was read by the Secretary.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Regular Meeting, December 11, 1900.

The President, HERMAN J. BOLDT, M.D., in the Chair.

DR. E. B. CRAGIN presented

THE SPECIMENS OF TWO CASES OF TUMOR COMPLICATING THE PUERPERIUM AND NECESSITATING OPERATION; THE FIRST BEING AN OVARIAN CYST IN WHICH THE PEDICLE BECAME TWISTED DURING THE PUERPERIUM, THE SECOND A LARGE MYOMA WHICH BEGAN NECROTIC CHANGES DURING THE PUERPERIUM.

CASE I.—Mrs. O'B., age 19. Delivered at the Sloane Maternity Hospital October 20, 1900, of a male child weighing seven

¹ See original article, p. 214.

pounds ten ounces, after a short dry labor, this being her first child. Subsequent to her delivery there was discovered high up on the right side of the abdomen an ovarian cyst, with a long pedicle which allowed the tumor to be moved to nearly all parts of the abdomen.

Her puerperium was normal until the fourteenth day, when the temperature rose to 101.2° , and for ten days temperature fluctuated slightly above and below this point. For the succeeding six days the temperature gradually fell to 99° ; the pulse during these sixteen days ranged between 90 and 110. On the thirtieth day of the puerperium the patient was seized with vomiting and was unable to retain anything on her stomach during the whole day. The tumor at the same time became tense and more tender. There was slight change in either pulse or temperature; but, the vomiting and tenderness of the tumor persisting, a diagnosis of twisted pedicle of the tumor was made and the abdomen opened November 19, 1900. An ovarian cyst about the size of a large cocoanut was found slipping from the right side; it was purple in color and its pedicle was twisted one and one-half times. The left ovary was the seat of the dermoid cyst about the size of an egg.

Both tumors were removed and the abdominal wall closed in layers. The union was primary and convalescence uneventful.

CASE II.—Miss J., age 44. Admitted to the Sloane Maternity Hospital September 8, 1900. Her last menstruation had occurred in the early part of January, 1900.

For two years she had noticed a large, hard tumor in the abdomen. This tumor had made no change in her menstruation, it always being of the three-weekly type and lasting from three to four days.

On examination a large, hard tumor about the size of a fetal head was found to the right of and a little in front of the fundus of the pregnant uterus and intimately connected with it. During the next month the mass rotated so as to lie more behind the fundus, but before labor it resumed its former position in front and to the right.

One week before labor, while straining at stool, there formed in the lower part of each labium a hematoma which extended across the perineum. These were incised and packed with gauze. By the time labor came on these cavities had nearly closed. The labor, October 25, 1900, was prolonged, pains weak and infrequent, and the delivery was accomplished by low forceps. Credé's method of expulsion of the placenta failed and the placenta and membranes were extracted manually, both being very adherent. The patient lost thirty-eight ounces of blood and her general condition was poor. Pulse 112, temperature 99.6° . The temperature gradually rose for nearly twenty-four hours till it reached 104.2° . Three days later temperature dropped to 101° , at about which point it remained for twenty-seven days.

On the thirty-second day of the puerperium, as the patient

seemed to have made but little if any improvement, abdominal hysterectomy was performed and the specimen removed which is here presented. Although the cavity of the uterus seemed normal, necrotic changes had begun in the substance of the tumor, which seemed to be a myoma. The tumor and uterus when removed weighed eight pounds and two ounces.

DR. R. L. DICKINSON.—I should like to ask more in regard to the location of the tumor, where the tumor originally lay, and how far advanced pregnancy was.

DR. CRAGIN.—Both cases were full-term pregnancies. At first the tumor lay in front of the child, to the right, then the rotation of the uterus was such that the tumor went behind the child. The case was delivered with the help of the low forceps. It was an easy forceps and the condition of the child was good.

DR. DICKINSON.—What was the weight of the child?

DR. CRAGIN.—Seven pounds and ten ounces.

DR. A. PALMER DUDLEY.—I should like to ask the doctor why he delayed so long after confinement before operating; also, if he would advise others not so well equipped to watch a labor like that and risk the death of the child in order that he might get a normal labor. I make these remarks because I do a large amount of obstetric surgery at the Harlem Hospital and because I want to report a case.

A patient was brought into the hospital in an ambulance; the child was dead, and the mother was delivered by the house surgeon. She went on nicely, recovering from the delivery. On the tenth day after delivery I made an abdominal section and removed sixteen fibroids from the uterus, four of which were larger than an orange, the others ranging in size from a walnut to a pea. As I removed one of the larger fibroids I made an incision into the uterine cavity, and I found that, in delivering the child, the uterus had been cut by the forceps, and that the elevation of temperature that was present was due to the injury to the uterine walls by the forceps, and not to the fibroids. A fibroid which lay in the posterior wall was directly pressed on in the uterine wall, and undoubtedly the forceps bruised the structures as they protruded into the uterine cavity; the uterus was split. The woman recovered without rise of temperature.

This specimen presented is, of course, a large fibroid with normal ovaries, and I should like to ask the doctor if he would venture to do a myomectomy, drain through the cul-de-sac, and expect a recovery. My patient recovered and is now healthy, with healthy uterus and normal ovaries.

DR. CRAGIN.—The question is asked me why I let the patient go so long with the hope of a normal delivery. I will say, in the first place, that I realized that she was where we could do a Cesarean section within an hour's time, if it was deemed necessary, and that she was under close observation; that while the tumor at first was in front of the child, yet, by carefully watching the woman, it was noticed that the tumor

was gradually getting behind the child, out of the way of the canal, and so it was thought wisest to trust to Nature.

The other question was, why wait so long before removing the uterus after the puerperium? She had a hemorrhage of about thirty-eight ounces as the result of her labor. Another fact I omitted to mention was that two weeks before delivery, while straining at stool, there formed a large vulvar hematoma, which had to be opened and drained and packed with gauze. As a result of this, and the fact that she had albuminuria and was in poor general condition, I did not care to subject her to a radical operation. I found some decidua retained in the uterus over that part of the cavity against the tumor. I realized that there was some sapremia from that, and, as she seemed to be holding her own, I thought it best to leave her alone. But when, at the end of thirty days, she was where she was at the end of ten days, without improvement, it seemed to me that an abdominal removal of the tumor was indicated.

In regard to the third question—would I do a myomectomy in such a case and expect recovery to follow?—I would say that personally I would say no, for the reason that if you will look at the tumor and uterus you will see that the whole posterior wall of the uterus was involved in the tumor. I here show you the position of the round ligaments and the Fallopian tube, and the only part of the uterus that is intact is the posterior wall; now, in a uterus partly infected, to take away the whole posterior wall should be rather hazardous.

DR. DICKINSON.—I would like to ask if you would prefer to do a Porro treatment.

DR. CRAGIN.—If the patient was in good condition, yes.

DR. JOSEPH BRETTAUER demonstrated a specimen of

RUPTURED TUBAL PREGNANCY

which he had removed from a patient with the following history:

Mrs. G., 29 years of age, married six years, one miscarriage two years ago in the second month. One and one-half years ago a bilateral nephropexy had been done. Always menstruated irregularly, her last period being three weeks overdue on November 4, when she came under observation.

About two weeks previous to this date she noticed an occasional pain in the lower abdomen, and morning nausea.

On the morning of November 4, during an attack of vomiting, the patient had severe pain in the abdomen, was put to bed, and a physician sent for, who found the patient in a sanguinated condition and practically pulseless. Active stimulation, which was immediately resorted to, improved the patient's condition to such an extent that operative measures were practicable five hours after the first signs of rupture had appeared.

The abdomen was opened and found to contain an immense amount of fluid and coagulated blood—more, in fact, than I

have seen in cases of rupture after pregnancy had gone on for three or four months. Owing to the collapse of the fetal sac, which was formed by the uterine end of the tube, after the expulsion of the ovum, it was at first difficult to see which side was the offending one, as both tubes were apparently normal; only on closer observation an opening in the right tube was seen, close to its uterine end, about one-quarter of an inch in diameter, with sharp edges. In ablating the right appendages the tube was excised from the uterus. The ovum entire was found free in the abdominal cavity. The specimen shows the extreme dilatation of the impregnated part of the tube, the walls of which were as thin as paper. The patient stood the operation better than was expected, but succumbed on the ninth day to a septic infection starting from a widespread necrosis of the abdominal fascia.

DR. G. L. BRODHEAD.—I should like to ask how large the fetus was.

DR. BRETTAUER.—It corresponded to an intrauterine fetus of about sixteen or seventeen days.

DR. ABRAM BROTHERS.—If I understood the doctor, he stated that the patient had no syncope, in spite of the large amount of blood found in the abdominal cavity. That point is an interesting one to me, because I have considered it a valuable point in the diagnosis of ruptured ectopic gestation. This brings to my mind a case that was operated upon five days ago, where there was not only absence of syncope, but also absence of any pain. This woman came first under observation after she had covered a large distance in coming to my office. She was 39 years of age and had had children. After skipping a period she flowed for thirty days, and her appearance looked like a late pregnancy or the irregular bleeding of the menopause, although in the latter I do not take much stock until all other causes have been excluded. Having placed her under the influence of chloroform, a tumor was found in the right pelvis; the uterine cavity was found to be empty and enlarged to the depth of three inches. It was assumed that she had an extrauterine pregnancy, and she was sent to the hospital. Two days later (five days ago) the abdomen was opened, and I was surprised to find a considerable amount of blood in the peritoneal cavity. She had apparently had no pain or syncope; there was no reason to believe that the examination produced any rupture. The presumption was that the woman had an internal hemorrhage for some time. The case proves that a woman may have an intraperitoneal hemorrhage without syncope.

DR. J. E. JANVRIN.—What was found besides the blood clots?

DR. BROTHERS.—I found a ruptured tube on the right side. There was no question but that there was a ruptured ectopic gestation in the early stage of pregnancy.

DR. MALCOLM MCLEAN read the paper of the evening, entitled

A PLEA FOR THE RECOGNITION OF SOME OF THE FACTORS
IN THE MECHANISM OF LABOR.

The writer said that much that he had to say was commonplace and somewhat elementary, yet he did not consider it necessary to apologize for asking the attention of scientific specialists to certain processes which are in play in the course of a physiological function, and which are liable to be ignored or overlooked in practice.

The great immunity from evil results of radical operations which now obtains, on account of the observation of the laws of germ invasion, the advance in surgical technique, the more extended use of anesthetics and other adjuvants, make us bold to invade the domain of Nature. The evils resulting from this disregard of natural law go far toward offsetting the brilliant accomplishments which modern science has enabled us to demonstrate in the practice of obstetrics. The fact is, or so it appears to the writer, that injuries to the genital tract are about as frequent and about as serious as formerly. Indeed, a few new ailments have been added to the list of unhappy sequelæ, as, for instance, the loose pelves after symphyseotomy, the mutilations following extirpation of the uterus, tubes, or ovaries, or all together. The author did not wish to disparage true surgical skill, but only to call attention to a few of the important factors in the mechanism of labor.

First, he observed that in parturition performed under normal conditions there was a marked change in all the structures involved in the function. This change is due to such an alteration in the process of exosmosis involving the vessels, etc., about the pelvis, that not only are the muciparous glands excited to excessive action, thus lubricating all the mucous surface, but the subjacent tissues are softened and relaxed to a remarkable degree. This softening and relaxation should be a precursor to the mechanical stretching which the tissues must undergo, and every labor which is precipitated without this change involves difficulties and dangers which would otherwise be absent. Hence the danger of too hasty interference. As a rule, relaxation of the structures takes place less promptly in primiparæ than in multiparæ. The changes in the presenting head of the child should receive some attention, as the relative size of the head will depend somewhat upon the alteration in its shape. Unquestionably a very considerable disproportion will be effaced by the moulding of the head as it is compressed within the walls of the pelvic canal. An arrested head with increasing scalp tumor must not, however, be mistaken for the moving head itself. The presence of the liquor amnii is of great importance through the whole first stage, and it should be preserved, if possible, until dilatation is complete. When dilatation is accomplished, and the membranes draw flat and stiff across the uterine mouth with every pain, instead of bag-like to the point of rupture, we may with propriety assist by rupturing the sac.

A proper recognition of the forces employed in the several stages of labor is very important. Uterine contractions are of two kinds: first, the mild, insensible, tonic contraction which adjusts the organ constantly to its contents; and, second, the intermittent, rhythmic contraction which operates in dilating and emptying the organ. All excitement, mental or physical, which interferes with the regular contractions puts so much difficulty in the way. The impropriety of using ergot for stimulating a laboring uterus will be apparent if we remember that this drug causes tonic contraction to take the place of rhythmic contraction and relaxation. Moreover, the voluntary, accessory forces supplied in the expulsive stages should be recognized as belonging, not to the first or dilating stage, but to the second and third stages, where actual expulsion is in progress. If urged upon the patient before the completion of the first stage, the only effect will be the fatigue and demoralization of the patient, with added irritability to the uterine circular fibres and with less effectual contraction of the longitudinal fibres in overcoming the sphincteric fibres below. In labor with breech presentation careful observation along this line is most valuable, as the writer has demonstrated in recording thirty-odd consecutive deliveries by the breech without the death of a child. The obstetric canal should be unobstructed by bladder or rectum, hence the importance of emptying these before the engagement of the child. It sometimes happens that the child in its movements will so turn about upon its axis that the funis will not only be wound about the neck once or twice, but will describe a course about the arm and shoulders in such a way that its rotation forward is prevented. Thus the cord will be so disposed that the occiput and spine of the child will be posed toward the right sacro-iliac synchondrosis. Labor progressing, the occiput attempts to rotate forward, but the body, maintaining a tendency in the opposite direction, determines the occiput somewhat in the same way, and a persistent occipito-posterior position may result. In such cases manual anterior rotation to the right side proves unsatisfactory. The occiput itself may readily enough be turned forward; but, on removing the hand sufficient to allow the application of the forceps, one will be discouraged to find that he has somehow gotten the brow in the concavity of the instrument instead of the occiput. In such a case, if the hand be used to rotate the occiput from the right sacro-iliac synchondrosis posteriorly and around to the left anterior position, it will be found that such position will be retained. This is due to the unwinding of the misplaced funis.

In all operations with the hand *in utero* properly performed the manipulation should be done within the amniotic sac, and then, when the placenta and membranes shall have been expelled, any contaminating matter introduced by the hand will have been carried away completely without having come in contact with the vulnerable uterine structure. In ruptures

of the uterus it sometimes happens that the amniotic sac is pushed partly through the uterine wound ahead of the fetus without rupturing. In such a case the child may be drawn back into the uterus and delivered per vias naturales without the escape of amniotic contents into the peritoneal cavity. The expulsion of the placenta should be secured before the tonic uterine contraction sets in, and such attention should then be given the patient as will secure firm closure of the uterine wall. As the uterine walls have not been invaded with germs from without, even in a severe operation, if properly conducted, it is not desirable to use intrauterine washes or applications. The mouths of sinuses are naturally plugged with sterile blood clots, and these should not be disturbed.

Chloroform may be applied to control too violent and ungovernable engagement of the accessory expulsive forces, but it should not be given to the surgical degree of anesthesia except for instrumental or other severe operations. It should not be given in delivery by the breech after the head has crossed the perineum, for the voluntary accessory effort should be called upon from this time until labor is ended. The long-continued use of chloroform tends to relax uterine contraction and hence to induce postpartum hemorrhage. In the passage of the head from the entrance into the pelvic brim to its extrusion from the vulva, it must be remembered that it describes a spiral course, that on its engagement in the superior strait it must be in such a position that the long diameters of the head do not run directly across the conjugate of the pelvis. In the application of the instrument at the brim the tendency is inevitable to throw the head around so as to engage it with the long diameter corresponding to the shortest diameter of the inlet, thus making a practical deadlock with all its direful consequences. An autopsy performed on such a case showed that the child's head passed readily down to the bottom of the pelvis of its own weight so soon as it was turned in a flexed condition into one of the oblique positions. An observation of these common facts in the mechanism of labor will often enable the obstetrician to blot out "contractions of the pelvis" and other supposed difficulties.

DR. E. B. CRAGIN.—I feel like thanking Dr. McLean for bringing this subject before us to-night, and I wish to emphasize certain points which those of us who work in obstetrics find useful. In regard to the relation of the head of the child to the canal, it seems to me that the more we study the relation between the passenger and the passage the better able will we be to conduct the case safely, and the more fully we study the pelvic measurements the quicker will we know whether we are to expect trouble or not. The real criterion of the ease of the labor is the ease with which one can fit the passenger into the passage and can make the head flex and descend into the cavity of the pelvis.

In regard to the use of the hand within the amniotic sac, this is an important point and I wish to say that we should keep

our hands away from the raw uterine surface, if possible, working within the amniotic cavity, especially in the manual removal of the placenta.

In regard to the voluntary and involuntary muscles, whether we should ask the woman to bring into play her voluntary muscles or not, I believe that we should save the strength of the woman as much as possible during the first stage, for during the second and third stages it is of great value; conserve the strength during the first stage.

We are all agreed upon the use of ergot, viz., not to use it until the uterus is emptied.

DR. R. L. DICKINSON.—Dr. McLean should be thanked for emphasizing various obstetrical points, particularly the precipitancy in operative interference which is so common. A man in Brooklyn is said to have turned in one thousand birth certificates in a year; that is a man who tears a great many perineei—he admits that he does. I was called in consultation with a practitioner in a case of obstetrics because things did not progress; the patient was tired out; after being quieted by morphine, she became rested and things progressed well.

In regard to the use of the membrane as a rubber glove in doing certain work within the uterine cavity, it is feasible in a certain number of cases, particularly in removing the placenta. The method, which I have already published, consists in seizing the cord, using it as a guide into the opening; the tense cord is pulled upon by the left hand, and the edge of the membrane is seized with the same hand; in this way the hand will find its way into the membrane. Then, if the placenta is not adherent, using the membrane as a mitten, the edge of the placenta can be found, peeled off, and removed.

In reference to the question of occipito-posterior positions, rotation of over one-half a circle is a measure very frequently called for, and high manual internal rotation by introducing the hand and seizing the shoulders and assisting the occiput to rotate from R. O. R. to the L. O. P. position is the method demanded, because of the necessity of rotating the trunk as well as the head. If the occiput is rotated only one-quarter of a circle from R. O. P. to R. O. A. before the forceps are applied, the occiput will return to its former position.

DR. J. C. EDGAR.—I am much gratified at the conservative stand taken in the management of normal labors. I agree with the doctor in regard to the frequency of incomplete flexion of the head of which no statistics have been published. I am convinced that one of the many complications we have to deal with is this one, where, instead of three and a half inch suboccipito-bregmatic diameter, we have four and a half diameter of the occipito-frontal, and all that is necessary is to push up the bregma and bring the chin against the sternum.

In regard to the anesthetic, I am fond of ether, which has not the objection of chloroform in controlling the involuntary forces; even in breech cases I use ether with the Allis inhaler, and not chloroform. In the later stages of labor I use ether

without the fear that it will entirely do away with uterine contractions. Only this afternoon I delivered a case at the clinic where too much chloroform had been given, and it was necessary to allow the patient to come out of its influence, because it did away with the uterine contractions. In obstetrics ether in small quantities does not have that objection.

I agree in what has been said as to the glove action of the membranes. Everybody should make use of this protection.

In reference to the manual rotation of the head I cannot quite agree with the doctor. I would hesitate to pass my hand into the uterus to rotate the child around a small arc of a circle, unless I delivered the child in a few minutes; intrauterine asphyxia may follow, making it often necessary to aspirate the larynx after birth, and many may die from inspiration pneumonia.

I cannot agree with the statement that it is a safe practice to grasp the chest of the child and turn the fetus around and then leave the case to Nature; you are sure to get intrauterine respiration. If, after a reasonable time, the head will not engage, I would prefer version, and extraction within ten minutes of that procedure. I would not throw out entirely the high forceps; it depends upon the case. If the case was one where we could bring the head down upon the levator ani, forceps could be used. I believe forceps have their place in these cases, and I would not hesitate to use them as moderate rotators.

To sum up: In selected cases, where the head could be brought down upon the levator ani, the Tarnier forceps might be used as tractors and moderate rotators. In the remaining cases I believe it would be best to perform version and complete the extraction within ten minutes.

DR. R. L. DICKINSON.—I wish to go on record as protesting against version in these cases, as compared with high manual rotation followed by forceps at once.

DR. S. MARX.—In considering occipito-posterior positions I certainly wish to go on record in stating that manual restitution almost always fails me. It appears to me to be irrational, and I do not believe that Dr. McLean advocates internal restitution from the start. We all know well that normal restitution occurs as the head enters the cavity or is upon the pelvic floor. Where in any particular case Nature fails, then the indication for operative interference is justified. The best obstetrician is he who knows *when* to operate. If the occiput persists and is still at the brim, the hand may be introduced into the uterus, a deliberate version performed, and the baby gotten out as quickly as possible. Most mistakes are made to-day because men do not remember that there is such a thing as malposition of a normal presentation. If you use hands, clean hands, in the uterine cavity, and make the position of the presenting part clear both to the eye and to the mind, the operator will have fewer fatalities to report.

In regard to the intrauterine tube, I carry one with me as a matter of form, but I have seldom used it in five years. I feel that I can keep my hands as clean as the average man. We

all know that the hands can be made reasonably sterile; that the vagina in a normal woman is sterile; that the uterine cavity is sterile; therefore I can see no need in introducing a possibly septic tube to wash out a uterus that is clean. I have not used the intrauterine tube for a number of years.

All do not advocate the use of quinine during the first and second stages of labor. I use it for the reason that I see contractions and relaxations which are regular, and I have never seen any bad effects produced upon the child. It rarely fails if given in large enough amounts—twenty grains by the mouth or forty grains per rectum of the bisulphate.

About the effect of chloroform in modifying the action of the abdominal muscles, especially on the after-coming head, I do not mind it a bit. One should utilize the *vis-a-tergo*, and not depend too much on the *vis-a-fronte*. In breech presentations I guide the presenting part, making it go in the direction I wish it to go, while my assistant forcibly flexes the head and increases the action of the abdominal muscles. If we have a well-flexed head there need be no fear of a still-born child.

DR. MALCOLM MCLEAN.—I agree with what Dr. Edgar has said in reference to the question of rotation. I do not like the operation suggested by Dr. Dickinson, of going up into the uterus and taking hold of the shoulders in order to do rotation. I rotate the body of the child from the outside bimanually. The question of high forceps I avoid in this operation. My object in speaking of occipito-posterior positions was to show the mechanism of rotation of the child naturally in the uterus and the winding of the cord, as shown by illustration. This has occurred five or six times in my own hands. It was to illustrate the mechanical factors producing such a condition that brought up the subject of occipito-posterior positions. In this mechanism the cord, after winding around the neck and buttocks of the child, makes a turn under the arm, and so holds the body of the child and excites reflex action of the child's muscles in the neck, such as is seen in the delivery by the breech. There is a reflex action when it draws and pulls upon the body of the child, which is not fanciful, and I take care not to cause it. This mechanism it was my wish to bring before the Society to-night. When the head is gotten around I do not apply forceps, but flex the head completely by the use of three fingers. I only use the forceps when the woman is exhausted.

In regard to the intrauterine tube, I never use it for the purpose of washing out the germs carried in by the hands.

An objection was brought up to-night against internal version being performed because it was a dangerous procedure to place the hand in the cavity of the uterus; I wish to say that if any hand is too dirty to go into the amniotic sac it is too dirty to go into the vagina.

In reference to the use of chloroform in breech cases. I use it to quiet the woman's fears until the head is engaged. So soon as the arms are down I want the woman to help me. I also want the *vis-a-tergo* on the part of an assistant.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

Meeting held November 7, 1900.

The President, MR. ALBAN DORAN, in the Chair.

DR. E. O. CROFT read a paper on

AN ANOMALOUS CASE OF ECTOPIC PREGNANCY, PROBABLY OVARIAN.

The history and physical signs pointed to a diagnosis of some form of extrauterine gestation, and the sac and its contents, found entire, were removed by abdominal section. There was free bleeding from rupture during operation, and although it was soon controlled by ligature of the broad ligament, the patient did not rally and died a few days afterward.

The autopsy revealed an absence of peritonitis, and the pelvic organs were removed for further examination.

The sac, before rupture, contained the complete ovum—fetus of about four months' growth, with placenta, membranes, and amniotic fluid. There was no blood or clot in the sac. Its relations were those of an ovarian tumor with short pedicle. The surface of the cyst contained follicles (Graafian?), and no separate structure corresponding to an ovary was evident on the same (right) side. The microscopic evidence of ovarian tissue in the wall was uncertain.

The Fallopian tube was present and uninjured, the fimbriated end free and patent, and the layers of the mesosalpinx undisturbed.

The uterus was intact, and the appendages on the opposite (left) side were normal.

The possibility of the pregnancy being ovarian is suggested.

DR. A. H. N. LEWERS then read a paper on

A CASE OF REPEATED ECTOPIC GESTATION

in the same patient, on whom laparatomy was performed on each occasion.

The case was that of a patient, 29 years of age, who had been the subject of ectopic gestation on two occasions. There had been no uterine pregnancy. The first ectopic pregnancy occurred early in 1894. Laparatomy was performed in March, 1894, and the left Fallopian tube was removed, containing a tubal mole. This specimen was reported on by a committee of the Obstetrical Society.¹ The ostium of the tube was open,

¹ Obstetrical Society Transactions, vol. xxxviii., p. 87.

but not dilated. The case on that occasion was one of *threatened tubal abortion*.

In May, 1900—*i.e.*, after an interval of a little more than six years—the patient was again the subject of ectopic gestation, and laparotomy was again performed. The parts removed consisted of the right Fallopian tube and ovary and a tubal mole. The ostium of the tube was widely dilated, and the mole had either been expelled into the peritoneal cavity or was lying loose in the dilated ostium at the time of the operation; so that on the second occasion the case was one of *complete tubal abortion*. The patient recovered well on both occasions.

Reference was made to Dr. J. Haig Ferguson's paper on "Repeated Ectopic Gestation in the Same Patient,"¹ from which it appears that, while there is a considerable number of cases reported of repeated tubal pregnancy in the same woman, laparotomy performed twice on the same woman is only mentioned in fourteen cases. According to the same authority, the interval between the ectopic pregnancies in the same patient has varied from six weeks to five years. In the author's case the interval, which was more than six years, seems, therefore, to have been exceptionally long.

Reference was also made to Dr. Edgar's paper on the same subject, also published in the *Edinburgh Medical Journal* for 1899.

DR. PETER HORROCKS thought that the specimen shown by Dr. Croft was well worthy of further examination and report by a sub-committee. He did not think the fact that ovarian tissue was not found in all parts of the wall was proof that it was not an ovarian ectopic gestation. Neither could he see any *a priori* reason why an ovum should not become impregnated and develop whilst still in a Graafian follicle.

Referring to Dr. Lewers' case, Dr. Horrocks said he had seen one or two instances of such repeated tubal gestations. He related a case in which he had removed a ruptured tubal gestation sac eight years ago and again six years ago. Dr. Jolly, of Sydenham, had diagnosed the condition on the second occasion, but Dr. Horrocks rather doubted its probability, owing to the extreme rarity of a repeated tubal gestation. The diagnosis was, however, confirmed by operation and verified by chorionic villi being microscopically proved to be present.

MR. BLAND SUTTON said he could not satisfactorily discuss the question of ovarian pregnancy on a specimen in which the gestation had gone so far as in Dr. Croft's specimen. He would be convinced of ovarian pregnancy when he saw "an early embryo and its membranes contained in a sac in the ovary." This he considered a fair requisition, and corresponded with the facts on which the present knowledge of tubal pregnancy was based.

¹ *Edinburgh Medical Journal*, 1899, p. 145.

In regard to Catherine v. Tusschenbroek's specimen of suspected ovarian pregnancy, he could state, after careful study of the paper and the figures, that there was no evidence of chorionic villi and nothing conclusive as to the presence of an embryo. Part of a true *corpus luteum* was, however, distinctly displayed in the drawing. Till he had obtained the proofs he desired he must remain a very active sceptic on the subject of ovarian gestation.

THE PRESIDENT said he agreed with Mr. Bland Sutton that Van Tusschenbroek's evidence, though important, was not conclusive. He himself had indicated sources of error, in accounts of cases of alleged primary ovarian gestation, in his notes on Dr. Arthur Beale's case of minute fetus found in the peritoneal cavity. The notes were published in the Obstetrical Society's Transactions for 1893. Still, it was unscientific to insist that this form of gestation was impossible. Perhaps Dr. Croft's specimen, which would be examined by a committee, might be quoted in future days as historical, being, with Van Tusschenbroek's report, the evidence which first convinced scientific observers of the possibility of primary ovarian gestation. The fact that both Fallopian tubes were normal did not preclude the possibility of very recent tubal gestation in one of them. This fact was interesting in relation not only to Dr. Croft's but also to Dr. Lewers' case. The President had reported in the *British Medical Journal*, vol. ii., 1891, page 789, a case where repeated gestation had probably occurred within a very short interval, remarking that "tubal abortion very early in pregnancy need not necessarily spoil the tube for its functions nor prevent subsequent pregnancy in its canal."

DR. CROFT, in reply, thanked the Fellows for the interest they had taken in his paper, and would much appreciate the opinion of a committee appointed to examine further and report on the specimen. He then referred briefly to a case that had occurred in the practice of a colleague since the paper had been sent in. The patient was operated on for abdominal hemorrhage thought to be due to a ruptured tubal gestation. On the abdomen being opened and the blood removed the tubes were found normal and free, but the bleeding was found to be proceeding from a small ruptured cavity in an ovary of ordinary size. The cavity proved to have the structure of a *corpus luteum*, and its contents to be a small ovum presenting, on microscopic examination, definite evidence of chorionic villi. He thought this specimen, which he had himself seen, would be likely to accord with the criteria of a primary ovarian gestation as stated by Mr. Bland Sutton. Dr. Croft hoped that he would be able to persuade the owner, Mr. G. P. Anning, of Leeds, to bring his specimen before the Society at a future meeting.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Appendicitis and Pregnancy.—A. Herrgott¹ reports two cases of appendicitis during pregnancy which terminated fatally in spite of operative interference. He holds that operation is demanded not only for all cases of appendicitis during pregnancy, but also upon all women having appendicitis who are susceptible of becoming pregnant. During labor the adhesions limiting the process are broken, infection becomes general, and the condition for treatment becomes very unfavorable.

Asthma and Pregnancy.—Asthma may occur, says Audebert,¹ for the first time during pregnancy. In some cases it may occur only during gestation and sometimes in successive pregnancies. He cites an instance in which he diagnosed a three-months pregnancy in a IV para who was nursing and not menstruating, being led to this conclusion by a sudden attack of asthma. In such cases he regards the occurrence of such paroxysms as a true sign of pregnancy. He makes no attempt to account for the etiological relationship of the pregnant state to asthma. If the disease antedates gestation it becomes aggravated. At the time of labor its symptoms are much more severe and dangerous or may be absent. The mother may die (one case in seven); the fetus suffers somewhat. Fetal motions may be slow or not present for a time. In one case absence of fetal heart sounds for a day was noticed; subsequently they were feeble and ceased soon after birth. The dyspnea never causes uterine contraction, but it is itself increased by labor. The writer advises morphine and local revulsion as treatment; quinine, if the case is one of hay fever. Induction of labor is indicated, especially in the interest of the child, if the attacks are severe and repeated. During an interval rapid digital dilatation, followed by rapid extraction by forceps or version, is preferable.

Diabetes and Pregnancy.—In a thesis upon this subject A. Salemi¹ states that in two-thirds of pregnant women there occurs a glycosuria which appears during the last two months and disappears without treatment. It bears no relation to diabetes mellitus. True diabetes does not prevent pregnancy. In mild cases gestation may terminate normally at term; in acute or subacute forms abortion or premature labor may be feared. The puerperium is often prolonged. The vitality of the fetus is often impaired and it may be still-born. A pre-existing diabetes usually continues unchanged during the first half of pregnancy, and then becomes suddenly worse, the

severe symptoms occurring after the seventh month. After delivery glycosuria, polyuria, and polydipsia diminish, but renal and pulmonary complications are threatening. Infection is favored by the constant presence of sugar. Marriage is permissible if the woman is young, the affection just beginning and yields easily to treatment, and if there are no lesions of the uterus and appendages. Repetition of pregnancy must be forbidden if the first aggravates the disease. If medical resources fail to relieve the symptoms and the life of mother and child are in danger, induction of labor is necessary.

Hyperemesis of Pregnancy.—Oedön Juszkaï^{*} considers it extremely exceptional that hyperemesis is due strictly to pregnancy. Such affections as hysteria, gastritis, tuberculosis of the peritoneum, meningitis, etc., may, under the influence of gestation, cause very obstinate vomiting, but this is not the hyperemesis of pregnancy. Before making a diagnosis of the latter, all other causes should be excluded and a parametritis discovered. As clinical signs of the affection he includes: rapid loss of weight; diminution of the urine and of the proportion of chlorides it contains and of the red blood cells; increase of the specific gravity of the uterine and blood, and of the frequency of the pulse; presence of albumin and renal elements in the urine and of normoblasts and mononuclear megaloblasts in the blood; and rapid fall of the morning temperature, with an evening rise. He considers these symptoms attributable in part to a local peritoneal affection which causes the emesis, in part to resulting inanition. As treatment he advises measures directed toward relieving the local peritoneal trouble, ice or hot applications to the abdomen, douches, and large doses of opium and dietetic measures. If, in the presence of the clinical signs he mentions, these fail to give relief in twelve to twenty-four hours, he favors inducing abortion.

Phlegmasia Alba Dolens during Pregnancy.—The occurrence of phlegmasia alba dolens during pregnancy has seldom been observed, although it is a common complication of the puerperium. A. Brindeau^{*} has observed such a case, accompanied by albuminuria, and with no obvious cause. He reports it for this reason, and discusses the question whether it was due simply to pregnancy. During this period the blood is known to contain an increased quantity of fibrin and there is a tendency to stasis in the lower extremities. If these factors were the actual cause of the trouble, many more cases would occur. Probably there had been some intercurrent infection, such as influenza or gastro-intestinal disorder, with but slight symptoms, causing both the nephritis and phlegmasia alba dolens.

Treatment of Phlegmasia Alba Dolens.—M. T. Brennan^{*} claims to have obtained excellent results from the application of solutions of picric acid. He believes that this relieves the pain and swelling more rapidly than any other agent. He employs a saturated alcoholic solution and renews the dressings

two or three times a day. An aqueous solution is used if the skin is injured or tender.

Tuberculosis and Pregnancy.—S. Bernheim¹ is convinced, by the study of many cases, that gestation does not always lead to tuberculosis in those who are predisposed to the disease, that an old or latent tuberculosis is not inevitably reawakened by a single pregnancy. The younger the woman the greater the danger, hence he advises against early marriages of debilitated girls, and care in obtaining complete cure of a tubercular patient before permitting maternity. The more extensive the lesion the greater is the danger involved by pregnancy. Multiple pregnancies are nearly always disastrous, though a single one may do no harm. Lactation is particularly dangerous and should always be forbidden. Induction of premature labor is justifiable in those cases in which tuberculosis is aggravated during the early weeks of pregnancy. Tuberculosis frequently causes abortion. After birth the child should at once be separated from the mother and placed in healthful surroundings.

J. J. Rebière² holds that anything which debilitates favors the development of tuberculosis. The puerperal state and lactation act in this way if there is any predisposition to the disease. With a life of ease and good general nutrition tuberculosis may remain dormant during pregnancy and develop after labor. If nutrition is poor, many women predisposed to tuberculosis acquire the disease after repeated pregnancies. The writer considers that induction of premature labor is justifiable only shortly before term and when the woman is in danger of death.

Transmission of Tuberculosis by Mother's Milk.—H. Roger and M. Garnier³ cite the following case as disproving the accepted view that the maternal milk never contains tubercle bacilli. The patient suffered from pharyngeal and pulmonary tuberculosis, the symptoms of which increased after delivery, death occurring seventeen days later. The child died at the age of 6 weeks, and autopsy showed lesions of the mesenteric glands, liver, spleen, and kidneys, with tubercle bacilli in the liver. Typical tubercular lesions were found in one guinea-pig which died after inoculation with milk from the woman's breasts; another received a smaller amount and the results were nearly negative.

Establishment of Milk Secretion.—Attention is called by Budin⁴ to the fact that the secretion of milk is frequently not established for some time after labor. If this occurs slowly efforts should be made to aid it. It is possible to re-establish the secretion in women who have stopped nursing for several weeks.

Long-continued Lactation.—Zeitling⁵ reports the case of a Jewess, 31 years old, who five years ago had a febrile puerperium with profuse, stinking vaginal discharge containing masses of broken-down uterine tissue. A month later, although patient did not nurse, there appeared an abundant

secretion of milk, which has continued ever since—that is, for over five years. The uterus is small and atrophic, the cavity almost completely obliterated, ovaries small; breasts enlarged, nipples pigmented, excrete milk containing colostrum and fat granules. The galactorrhea is ascribed to the existing and increased blood pressure in the mammary vessels. The amenorrhea is thought to be due to the preceding endometritis dissecans and consequent absence of uterine mucous membrane.

Elimination of Mercury in the Milk.—By a number of experiments upon women and animals, C. Sigilas and R. Dupouy¹ have demonstrated that mercury is excreted in the milk, but only after a variable number of days. The time for elimination depends upon the preparation and dose, the species of animal, age, etc. The delay explains the failure of other observers to discover mercury in the milk after the administration of large doses. It may itself be explained by the absorbent power of the leucocytes and other cells. The writers' deductions are that the fetus may be indirectly treated with mercury through the mother, but that if urgent symptoms of hereditary syphilis arise the child should receive direct medication.

Effect of Anaplastic Amputation of Cervix upon Pregnancy and Labor.—Pinard, Bossi, and others have protested vigorously against amputation of the cervix. It is claimed that it often causes abortion or premature labor, prolongs the period of dilatation of the cervix, predisposes to premature rupture of the membranes, favors faulty presentation, and causes a superinvolution sufficient to cause subsequent sterility. To combat these ideas M. Chaleix-Vivié¹² reports 4 new cases in addition to a former 17 in which he was able to see or perform the operation and later to deliver the woman. The 21 cases had 27 pregnancies after the operation. Four of these ended prematurely from tuberculosis, criminal abortion, induced labor for contracted pelvis, etc. Of the 23 pregnancies 21 were vertex presentations, 1 breech, and 1 transverse. The transverse presentation occurred in a multipara who had had a breech presentation before her operation. The breech presentation occurred in the third labor after operation of a multipara. In all but one case the rupture of the membranes occurred at an advanced stage of labor. Dilatation was always rapid, three to nine hours. The claim of superinvolution leading to sterility seems unfounded, as several of the writer's patients became pregnant four, five, or six years after operation.

Fibromyomata and Pregnancy.—From 150 personal observations of cases of uterine fibromyomata, Hofmeier¹ concludes that the proportion of unmarried to married women suffering from these neoplasms is no greater than of the same classes of women in regard to other gynecological affections or of the population in general. Although 25 per cent of married women having fibroids are sterile, and only 11 per cent of all marriages prove so, this sterility may have lasted for many

years and not be ascribable to the myoma which it antedated. The same may be said of the influence of these tumors upon fecundity. As, among 550 patients, 224 had never conceived and 70 had been pregnant only once, it may be inferred that the absence of pregnancy favors the development of the myoma. The existence of these tumors has little effect upon conception, and rarely interferes with the course of pregnancy, hence operation is seldom needed during gestation, though sometimes at its close. Labor usually proceeds favorably with some attention. Operation may subsequently be necessary.

Eustache⁹ reports one successful case of total abdominal hysterectomy for labor obstructed for several days by a large fibromyoma. As he found this operation easy, he concludes that it should always be employed in such cases.

Interstitial Pregnancy.—Bar and Bufnoir¹ describe an autopsy upon a woman who died five days after an attack of severe abdominal pain and syncope. Entirely outside of the uterine cavity, but not in the tube, was found a fetus which weighed 1,025 grammes. Muscular fibres were seen running across the sac which contained it.

Have Maternal Impressions any Effect on the Fetus in Utero?—W. Duncan¹² cites a case of a physician's wife who, when she was seven weeks pregnant, had her picture taken with her husband. In the photograph her husband's hand looked deformed, as if it had only a thumb and little finger. She frequently showed the picture to friends and always pointed out the deformity. When the child was born it had a deformed hand similar to the deformity in the picture. She showed this deformed hand to a friend who was pregnant and who was very much shocked. This woman was later delivered of a child with all its extremities deformed.

Observations on Human Placentation in its Second Stage.—C. Van Tusschenbroek¹³ concludes that the macroscopical form of the placenta is accomplished about the sixth month of pregnancy. At that period the decidua reflexa is the effect of mechanical pressure. The reduction of the villi of the chorion leve is chiefly effected by the obliteration of the intervillous spaces between chorion and reflexa.

Difficult Labor.—Carl Weidner¹⁴ mentions a case of prolonged labor in which the obstruction to labor was edema of the child. The child's body was extensively edematous, particularly so about the abdomen. There seemed to be an edematous condition of the abdominal wall, as well as ascites. The umbilical cord was about one inch in diameter and edematous. The lower extremities were also swollen. There was a tendency on the part of the mother to become dropsical at times. There was a very large amount of amniotic fluid. The placenta was very large and soft. The child was born dead.

Traumatic Cephalhydrocele.—J. Beard¹⁵ discusses a case of cephalhydrocele occurring after a protracted labor. On palpation the tumor, about the size of a large walnut, was found to be tense, elastic, and fluctuating. During the

manipulation the child cried, which made the swelling become more evident and tense. There was no pulsation, and the fluid contents could be partly reduced. On examination of the tumor a month after delivery it was found somewhat smaller, and imparted to the examining hand the sense of egg-shell crackling. Two months after delivery the tumor was half its original size and firmly ossified. The child is healthy.

Rupture of the Symphysis.—G. A. Himmelback¹⁶ reports a case of rupture of the symphysis which occurred during parturition. The case appeared to be normal in every way, but upon the following day the patient complained of considerable pain in the pubic and right ilio-sacral regions. Upon examination it was found that there was free movement at the symphysis pubis. The vagina and vulva were kept sterile and a tight bandage applied, and the patient kept on her back for twenty-five days. For some time there was some movement in the joint, but now, at the end of five months, the joint is immovable, although at times pain is complained of.

Artificial Physometra during Labor.—During the past year O. Rapin¹ has caused an artificial physometra in ten labor cases in which the fetus was in imminent danger of asphyxia. The results claimed are: eight living children, one dead, and one which he omits before figuring his percentages, because it was dead before he introduced air into the uterus. After giving this excuse for improving his statistics, he offers no explanation of his reason for filling the uterus with air in such a case; its only apparent object is to show the effect upon the mother. Five of the children lived to leave the hospital, two died from fracture of the skull, one monster died in a few minutes. The mothers all escaped injury.

Pinard¹ is not convinced of the harmlessness of this procedure. He considers Rapin's statistics rather small for extensive conclusions, and suggests that a comparison with his own results would explain to Rapin his preference for other methods.

Permanent Enlargement of the Pelvis.—Commandeur and C. Martin¹ conclude that the interposition of a prosthetic apparatus between the pubes of the bitch after symphysectomy is a harmless method of securing permanent enlargement of the pelvis. In their two cases fistulæ resulted; in one it closed after seventy days. The functions of locomotion were rapidly regained. In one case an existing pregnancy was not disturbed and labor was normal. The writers are not prepared to report as to the eventual formation of a line of bony union.

Duehrssen's Tamponade in Postpartum Hemorrhage.—Spaeth¹⁷ reports a case of atonia uteri in which intrauterine tampons of iodoform gauze did not cause permanent uterine contraction. The patient came under observation when pregnant five months, in an aggravated anemic condition. Fetus apparently dead; has lost blood for several weeks. Dilatation of cervix and evacuation of uterine contents. Relaxation of

uterus and considerable flowing, not checked by massage and hot injections, therefore firm uterine and vaginal tampons and subcutaneous injections of ergotin. Uterus contracted well and remained hard; hemorrhage also ceased. Spaeth considered it safe to leave the woman, but was summoned back an hour later, only to find the uterus again relaxed and patient losing considerable blood. The usual means to combat extreme loss of blood, uterine massage, and a new, firm tampon finally induced permanent contraction, and the woman got well. This case is of special interest, because since the introduction of Dührssen's intrauterine packing postpartum hemorrhage was considered to be under absolute control.

Operation for Inversion of the Uterus.—Oui¹ has reduced by operation a uterus which had been completely inverted by traction upon the cord during labor five months before. No diagnosis had been made, and the woman came to Oui on account of severe hemorrhages. After opening the anterior cul-de-sac it was necessary to incise the anterior wall of the uterus to within two centimetres of the fundus. Complete recovery followed suture of the reinverted uterine wall.

Rupture of the Uterus.—G. von Zweyberg¹⁸ quotes the statistics of 26 cases of rupture of the uterus occurring in 24,839 deliveries at the Helsingfors clinic, as showing that the usual cause of death is infection during labor.

While attempting to rectify a neglected shoulder presentation the uterus was ruptured, whereupon the patient was advised to enter a hospital. To do this she travelled one hour by wagon, another hour by train, and finally walked for a half-hour before she reached the hospital. Schwarz,¹⁹ who reports the case, removed the uterus, which contained a macerated fetus, per abdomen. The patient was already thoroughly septic, and, in spite of serum injections, she died two days after delivery.

Extraction of a Living Child Nineteen Minutes after Death of Mother.—A woman who suffered from mitral insufficiency without compensation died after giving birth to a living child. Kirsch²⁰ arrived nineteen minutes after death and found the foot of a second child projecting from the vulva. This child was rapidly extracted and resuscitated. It died, however, a few hours later.

Cesarean Section.—L. Roberts²¹ performed Cesarean section on a woman whose pelvic cavity was blocked by a fibroid tumor of the uterus, so that the conjugate diameter was reduced to one and a half inches. The tumor sprang from the posterior wall of the uterus. The patient ran a septic temperature after the operation, and antistreptococcic serum was used with good results. Both mother and child are alive.

Retention of Membranes after Delivery.—Maygrier¹ presents statistics of the treatment of such cases at the Maternité de la Charité, showing that the best results are obtained by immediate removal of the retained membranes after labor, manually or instrumentally, whenever asepsis of the uterus is questionable or there is any elevation of temperature.

Eclampsia.—Klein " reports the case of a woman, 25 years old, who when seven months pregnant was seized with eclamptic attacks. Premonitory symptoms existed a short time. Urine contained large quantities of albumin. Pains absent. Attacks repeated themselves at shorter intervals and patient remained almost continuously unconscious. Cesarean section was performed without an anesthetic, as patient was absolutely oblivious to pain. Child dead; heart sounds were not heard before the operation. Patient did not regain consciousness and died two days after the operation. Temperature and pulse gradually rose, but respiration continued slow and regular. A curious phenomenon was observed in the period preceding exitus. While testing the corneal reflexes respiration suddenly ceased, to begin again with the removal of the fingers from the cornea. This was repeated several times, even the most gentle touching of the cornea being followed by the immediate cessation of respiration. A possible explanation of this unique phenomenon is that the patient was in a deeply uremic condition, the body and brain being thoroughly saturated and poisoned with excrementitious substances. The central nervous system, being in a condition of extreme irritability, required only the additional irritation as produced by the finger upon the cornea to overwhelm the respiratory centre, as a steel spring will snap off if the tension becomes excessive.

Treatment of Puerperal Eclampsia.—J. B. Killebrew," when the symptoms first appear, advises absolute rest, fluid diet, bowels should be kept open, do not purge, keep skin active by a daily warm bath, nitroglycerin for hard tense pulse. The above-named directions he believes are secondary to the use of enemata of saline solution in quantities varying from one to three pints once or twice in twenty-four hours. When the symptoms are more severe use chloroform to control the convulsions. Bleed the patient and infuse. The amount of blood withdrawn varies with case; ordinarily from twelve to twenty four ounces of blood are withdrawn and seventy-two ounces of salt solution injected. Bleeding should be practised in all except the very anemic. The uterus should be emptied at once. First control the convulsions with chloroform; secondly, bleed the patient and give intravenous injections of normal salt solution; and, thirdly, empty the uterus.

Influence of Gonorrhea on the Puerperium.—A. W. W. Lea" believes that a purulent discharge during labor which is capable of producing ophthalmia neonatorum is evidence of gonorrheal infection and renders the patient peculiarly liable to puerperal infection. This infection is probably a mixed one, but gonococci may exist in the uterus during pregnancy, and during the puerperium they may be obtained in pure culture from the uterine cavity. About sixty per cent of women suffering from gonorrhea at time of delivery pass through a normal puerperium. Infection is favored by (1) lacerations, (2) forceps, (3) manual interference, (4) prolonged labor.

The types of infection met are: purulent endometritis, acute pelvic peritonitis, acute parametritis, general septicemia (a mixed infection in most cases). Pregnancy, labor, and the puerperal state are likely to cause a recrudescence of an old gonorrhea. In some cases an old gonorrheal inflammation of the ovaries, tubes, or pelvic peritoneum may become virulent during puerperium, setting up acute peritonitis which may prove fatal. The diagnosis of "gonorrheal puerperal infection" depends upon (1) previous history, (2) presence of a purulent vaginal discharge during labor, (3) the development of ophthalmia neonatorum in the infant within three or four days of birth, (4) the discovery of gonococci in the uterine or vaginal secretion. The prognosis is usually good as to life, but recovery is often incomplete.

Puerperal Infection.—Ferré¹ calls attention to the importance of early diagnosis of puerperal infection. As symptoms of the prodromal stage he includes: slight elevations of temperature, usually in the evening, increased frequency of pulse not explained by any other condition, partial or complete insomnia, slight headache, diminution, suppression, or fetidity of the lochia, and slight chilly sensations.

In one of a series of papers read at the Thirteenth International Congress of Medicine, Doléris¹ states that the ordinary pathogenic bacteria of puerperal septicemia are the streptococcus pyogenes, most frequently, the staphylococcus aureus, gonococcus, bacillus coli communis, etc. He writes that certain anaerobic saprophytes may develop and act as pathogenic bacteria, especially with retention of the placenta. The association of different species seems to lead more surely to infection which usually kills by toxemia. The staphylococcus aureus may also prove fatal by visceral metastases. Clinical facts force an admission that autoinfection may occur from pathogenic organisms pre-existing in the cervix or tubes.

Menge and Krönig¹ hold that it is impossible to distinguish between puerperal fever due entirely to absorption of toxins and that due to actual penetration of the bacteria into the tissues of the organism. Puerperal gonorrheal infection from a pre-existing gonorrheal lesion is not properly autogenous, as it is simply an extension of the process. As the staphylococcus pyogenes puerperalis and aureus, the bacillus coli, the gonococcus, and bacillus diphtheriae do not live as saprophytes in the vaginal secretion, they cannot cause an autogenous infection. Such an infection, by anaerobic bacteria, from the vaginal secretion is improbable, and from the cervix, cavity of the uterus, or tubes certainly never occurs, as bacteria never exist as saprophytes in these localities. In heterogenous infection the hands of the examiner must be considered the most important agent, the instruments being sterilized. The virulence of an infection diminishes with the length of time the bacteria have lived on the body as saprophytes.

Pestalozza¹ gives the results of his observation of 200 cases

of puerperal infection seen in the isolation ward of the Obstetrical Clinic of Florence. In this institution vaginal douches during labor of a healthy woman are considered superfluous and dangerous. Rigorous disinfection of the external genitals and of the hands and instruments of the obstetrician is alone employed. If the woman has an infectious disease of the genital tract, vaginal examinations are omitted. Septicemia is guarded against by preventing premature rupture of the membranes; by immediate suture of all vulvar, vaginal, or cervical lacerations; and particularly by avoiding any precocious interference during labor. No postpartum intrauterine or vaginal douches should be employed. In case of infection its exact site of entry must be located. The streptococcus was the only organism found by the writer in cases of puerperal peritonitis or metastatic deposits. The staphylococcus was found only in multiple abscesses of the uterus after criminal abortion; the bacillus coli, only with decomposition of liquor amnii.

Döderlein¹ advises the use of rubber gloves during vaginal examinations as most certainly removing the chief cause of puerperal infection.

Brindeau and Macé¹ present the deductions drawn from bacteriological examination of 8 cases of fetid lochia. They believe that putrefaction of the lochia is not due to a specific microbe, but that it may be caused by a number, both aerobic and anaerobic.

Doyen¹ says that ordinary puerperal fever is produced almost exclusively by varieties of the streptococcus pyogenes. The most serious cases are those in which it is confined to the uterine cavity. In these the discharge has no odor.

Veit¹ holds that autogenous infection does not really occur. In addition to vaginal examinations, sexual intercourse and introduction of feces into the vagina may cause infection.

Valenzuela¹ advocates immediate manual curettage of the uterus for retained decidua.

Draghiescu¹ treats septicemia by intrauterine douches followed by tamponade of the uterus with gauze saturated with 1:20 or 1:10 carbolic acid.

P. Pecker¹ claims that in cases of puerperal infection hypodermatic injections of normal salt solution not only increase the vital resistance of the body, but also increase the contractility of the uterine muscle, thus aiding to empty the uterus of the source of infection.

Metritis Dissecans.—An interesting case of postpuerperal uterine inflammation is reported by Doschkerwitch.¹ A woman 22 years old was confined at full term. Eight days later severe chills, high temperature, and stinking discharge lasting nine days. On the sixteenth day post partum a large piece of necrosed tissue, about the size of a man's hand, was expelled, whereupon the temperature declined and the patient's condition improved. The mass consisted of a portion of the uterine wall, containing thrombosed vessels and numerous streptococci.

The recent literature contains several reports of this comparatively rare complication of the puerperal state. These have been collected by Beckmann,¹¹ of St. Petersburg, who also adds fifteen self-observed cases. Beckmann proposes the name uterine gangrene, which is certainly more expressive than the above designation. The main features of the disease are a partial necrosis of the uterine walls, caused by a streptococcic infection, the sequestrum being expelled after about three weeks, when convalescence usually begins. The other symptoms are fever, delayed involution, and excessively putrid discharge. Tedious labor, operative interference, and typhoid fever are mentioned as important etiological factors. An expectant therapy is advised, and Beckmann especially warns against intrauterine irrigation, because of the great danger of perforating the friable uterine walls.

GYNECOLOGY AND ABDOMINAL SURGERY.

Histology of the Nervous System in the Uterus.—By the aid of Nissl's method, Keiffer¹² has found in the uterus of the bitch, monkey, and woman special cells which resemble histologically in all respects ganglion cells, though varying in the different species of animals examined. By Golgi's stain he showed that these cells are of the type of a cell of the sympathetic nervous system with one or more protoplasmic prolongations and an axis cylinder. These prolongations form a plexus. In the connective tissue between the bundles of muscle fibres there appear to be nerve cells whose processes seem to supply the muscle fibres. The majority of the nerve cells seem to be on the surface of or near the uterine blood vessels of all sizes. They are even found in the walls of the vessels between the smooth muscle fibres. They are seen on the surface of the capillaries, and their processes are in contact with the vascular endothelium. Though existing throughout the mucosa, they are found there especially along the vessels and under the epithelium of the glands. Their processes terminate as free points or slight button-shaped swellings. As the walls of blood vessels become reduced, soon after entering the uterus, to simple endothelium in direct contact with muscular tissue, Keiffer says that the whole uterus might be considered, ideally, as merely a sort of muscular expansion of the vascular walls; hence stimulation of the vasomotor nerves of the uterus would result in contraction or relaxation of the entire uterus. In the neighborhood of the vessels, especially at their points of bifurcation, are found nests of ganglion cells which actually appear to be intrauterine ganglia. A portion of the activity of the uterus in case of destruction of the lumbar centres, or of the pelvic plexuses of the sympathetic, or of the nervous connections of these centres, by myelitis or pelvic suppurations, may be attributed to these cells. The uterine ganglia undergo certain changes, as do those of the cerebro-spinal system in general, but it is not yet possible to classify them as

characteristic of fatigue, intoxication, inflammation, or any particular functional state of the uterus. In the human embryo these cells may be demonstrated by Nissl's stain after seven and a half or eight months. In fibroids there seem to be none present, though they are found in abundance in the surrounding normal uterine tissue.

Cervical Metritis.—According to S. Pozzi,¹ acute or chronic inflammation of the cervix may exist for a long time without invading the body of the uterus, though acute lesions of the cervical mucosa easily extend to that of the body, and chronic inflammatory changes of the cervical parenchyma (sclerotic and sclerocystic degeneration) promptly affect the nutrition of the entire uterus. The writer considers trachelorrhaphy as far inferior to biconical resection of the cervix, and advises its abandonment. He says that in nulliparæ many acute, subacute, and chronic lesions of the cervical mucous membrane are connected with poor drainage resulting from a narrow os externum. The most important step in the treatment of such cases is the operative construction of a proper orifice for the cervix.

Döderlein¹ refers to the fact that the alkalinity of the mucus secreted in the cervical canal is fatal to all bacteria which may enter into that canal, except the gonococcus and tubercle bacillus. This fact is important in connection with the etiology of cervical metritis, as microbic infection is usually the cause of inflammatory diseases of the canals or cavities of the body which communicate with the exterior. Lacerations of the cervix and all causes of endometritis are important etiological factors of non-infectious cervical metritis.

Mendes de Léon¹ says that cervical metritis should not be considered or treated as a distinct lesion, as it is usually accompanied by a similar affection of the body of the uterus. He also believes that the term cervical metritis should usually be replaced by that of cervical endometritis, since inflammation of the mucosa is rarely connected with a lesion of the deeper tissues.

Acute Senile Endometritis.—L. H. Dunning² has made the following summary of two cases of acute senile endometritis. The lesion found in both uteri was an acute inflammatory process. The characteristic pathologic features of the inflammation were: (a) a thickened endometrium, the free surface of which is devoid of its epithelial layer; (b) increased vascularity with peculiar arrangement of small blood vessels; (c) small round-cell infiltration; (d) diminished glandular elements; (e) degeneration of the coats of the arteries of the muscular layer of the organ. The mucosa of both cervix and body was involved in both cases, the involvement of the body being most marked. Small round-cell infiltration extended into the upper muscular tissue. In both cases one appendage was diseased, one cystic ovary in one case, in the other a cystic ovary and an inflamed tube. In one case there was marked retroversion of the uterus, in the other the uterus was

in normal position, and in neither was there marked stenosis of the internal os, yet there was a considerable accumulation of fluid within the uterine cavity. The presence of diseased appendages in both cases, and a mild form of pelvic peritonitis in one, seems to indicate that the inflammation is prone to extend beyond the limits of the uterus, and if such extension is demonstrable by combined examination an extirpation of the uterus and appendages is the best treatment.

Endometritis Dolorosa.—Pinkus " publishes four new cases and discusses the etiology and symptoms. The disease is usually observed in younger individuals, and is apt to follow upon severe shocks to the nervous system, such as death of husband or lover. Characteristic is the extreme sensitiveness of the endometrium, which, however, is localized in the fundus or cornua. Thorough curettement usually cured the patients. The removed mucous membrane showed glandular hyperplasia.

Procidentia Uteri.—A. L. Smith " prefers ventrofixation combined with amputation of the cervix and anterior and posterior colporrhaphy in procidentia uteri of old women.

Operative Treatment of Retroflexion of the Uterus.—Biermer " agrees with Winter that the symptoms of retroflexion are due to the accompanying complications and are not caused by the uterine displacement. He states, however, that women who have to perform continuous manual labor (servants, trained nurses, etc.) require sooner or later operative treatment. The correction of displacements with the pessary requires both patience and skill, and is not appropriate in virgins. The author is not an advocate of the Alexander operation, which he believes has a limited field of usefulness and is only indicated if the uterus retains its mobility. He also opposes vaginofixation during the child-bearing period and in cases of fixed retroflexion. The fact that modifications of vaginofixation are constantly published, only to soon be abandoned, is sufficient illustration of the inherent faults of this operation. If operative treatment is indicated Biermer favors Olshausen's method of ventrofixation, after which complications during pregnancy and labor have never been observed.

Ventrofixation.—Louis Frank " cites a case in which one tube and one ovary were removed and also a ventrofixation performed. The patient became pregnant two years after the operation and went to term and was delivered without any serious difficulty. During the pregnancy she suffered from attacks of severe pain. After labor the uterus went back to its old retroflexed position, but was replaced easily.

Complications following Alexander's Operation.—Muratow " describes five cases in which the shortening of the round ligaments was followed by disagreeable complications. Two cases became pregnant, but both women had premature births. This is ascribed to the fixation of the uterus within the true pelvis and consequent interference with its normal growth and expansion upward. The author also notes that

labor was extremely difficult and tedious. One woman died from sepsis, due, it is stated, to insufficient uterine involution. In two other cases the ovaries became incarcerated between the uterus and anterior abdominal wall, and in the fifth case the retroflexion was not permanently cured and a second operation (hysteropexy abdominis) became necessary.

Appendicitis: Its Relations to Gynecological Diseases.—Among 280 laparatomies performed during the last two years, Amann" found in 17 cases a direct relation between the diseased appendix and pathological condition of the genital tract. He observed four times typical perforation of the appendix, with the formation of large abscesses, secondary to an infection of the right adnexa. In the other cases the appendix was adherent to a pyosalpinx, and with this was drawn behind the uterus into Douglas' cul-de-sac. Amann advises inspection of the appendix in every case of laparotomy, and if the patient's history in any way points to a diseased appendix the vaginal route is contraindicated.

Treatment of Metritis by Methylene Blue.—Chemically pure methylene blue in concentrated solution, or preferably as a powder, is considered by Chaleix-Vivié and Kohler" as extremely valuable in the treatment of metritis. Their conclusions are drawn from 20 cases in which this was exclusively employed. They claim that it is painless, not caustic or toxic; that it rapidly suppresses metrorrhagia and menorrhagia and diminishes leucorrhea. It diminishes and at times completely relieves pain. This analgesic action is most marked in dysmenorrhea connected with changes in the mucosa. Lesions of the adnexa and parametrium are favorably influenced by this treatment. Its alterative action is most marked in old cases of ectropion with bleeding and infection. If the skin is stained by the drug, a small quantity of hydrochloric acid poured over the surface and immediately washed off with water will remove the spots. Linen so stained should be washed freely in running water, then in a solution of soda.

Postoperative Psychoses.—In connection with a case of postpartum hemorrhage, which ceased after drainage of the uterus with a strip of gauze soaked in iodoform in glycerin, and which was followed by mental disturbance, C. Zalackas" discusses the subject of postoperative psychoses. He holds that postpuerperal psychoses do occur; that psychoses after gynecological operations are rare, and are observed in women who are predisposed or already mentally unbalanced. Mental troubles may follow any other operation as well as oöphorectomy. There is no relation between the psychical trouble and the operation itself; an operation, *per se*, never causes insanity. There is an anteoperative state of fear which may last after operation. Menstruation and the menopause play an important part in influencing the mental condition. The writer concludes by stating that fear of mental disturbance should never dissuade the surgeon from the performance of an operation which is clearly indicated.

Disease of the Fallopian Tube.—J. R. Guthrie," in his experience of the last year, has found that 80 per cent of diseases of the tubes are of gonorrheal origin. From facts collected from fifteen cities of Iowa, he finds that 70 per cent of the cases are of gonorrheal origin. He believes that the importance of gonorrhea in causing tubal disease has not been properly emphasized.

Curettement of the Bladder and Instillations of Corrosive Sublimate.—C. G. Cumston " believes that sublimate instillations will often produce a very great improvement in the distressing symptoms met with in both tuberculous and non-tuberculous cystitis. In some cases a complete cure may be obtained. When the instillations fail to produce the desired effect, curettement of the bladder is indicated in both tuberculous and non-tuberculous cystitis. In gonorrheal cystitis instillations of sublimate are particularly efficacious and rapidly subdue the pain. Under favorable circumstances a radical cure of primary tuberculous cystitis may be obtained by curettement when the vesical lesions are localized. When the lesions are extensive they should be treated directly by suprapubic cystotomy. Much relief may be obtained from curettement in cases where the infection is general. When cystitis is due to a prolapsus of the genital organs, and when hysteropexy combined with anterior and posterior colporrhaphy does not relieve the symptoms, curettement and instillations are the proper treatment.

Correlation between Sexual Function, Insanity, and Crime.—H. Macnaughton-Jones" states that disorders of ovulation are frequently attended by mental aberration, and in a proportion of cases originate the mental disturbances. The same remarks apply to disorders of ovulation which have a pathological cause. In the majority of cases the nervous disturbance is of the neurasthenic character; in only a small proportion does it assume so grave a type as melancholia, mania, or dementia. When, in an insane person, ovulation and its external manifestations are erratic or absent, the erraticism or absence may be a consequence of the general and insane condition and not a causal condition; but, under any circumstances, such abnormal menstruation appears to have an aggravating effect on the insanity and requires treatment. Sufficient evidence is now advanced to justify the removal of the adnexa or uterus in insane women when there are gross lesions of the former or tumors of the latter. Operation must be advised according to the psychological condition of the patient and the type of her insanity. It does not appear that there is in a healthfully-minded woman who suffers from disease of the genitalia any special risk of postoperative insanity. On the other hand, if there be a psychopathic predisposition there is danger of postoperative mental disturbance. The postoperative mental effect does not appear generally to be of a serious or permanent nature. The relation of aberrant sexual function or a disorder of menstruation to any criminal

act ought to be taken into consideration in determining the responsibility of the woman.

Hernia of the Bladder through the Pelvic Floor.—F. B. Harrington " cites a case of hernia of the bladder through the pelvic floor from traction of a subperitoneal fibroma. The tumor apparently originated from a split or ring in the levator ani muscle close to the ascending ramus of the pubic bone. The patient presented a mass pendent from the left buttock, extending forward to a second tumor pendent to the left labium. The circumference of the large tumor was $18\frac{1}{2}$ inches. The large tumor decreased in size when the urine was drawn. An abdominal incision was done, but reduction failed, and was finally accomplished through an incision from the tuberosity of the ischium to the labium majus. The ovaries and tubes were removed and the uterus brought forward and down and sutured over the hole in the pelvic floor.

Medullary Narcosis.—J. R. Goffe " has performed two hysterectomies under cocaine anesthesia, one a vaginal hysterectomy, the other an abdominal. The patient upon whom the abdominal operation was performed had a hydrocephalic head and a kyphotic pelvis. He was unable to enter the subarachnoid space at first, but after three trials the needle was introduced into the third lumbar space. As analgesia was very imperfect, another injection was given. Sweating, nausea, vomiting, and headache occurred in both cases. Recovery uneventful in both cases.

Dolérís and Malassis " have employed this method satisfactorily in twenty-five cases. The minimum dose of cocaine injected into the spinal canal was one centigramme. The after-effects have rarely been disagreeable.

H. J. Boldt " reports a case upon which he tried medullary narcosis and failed in getting the desired anesthesia. The technique was carried out very carefully. He urgently commends caution in the employment of medullary narcosis.

Chronic Constipation.—William J. Mayo " has operated in two cases of chronic constipation due to narrowing of the ileo cecal orifice. In both cases the patients were thought to have chronic appendicitis, but the appendices were found to be normal. In both cases an incision was made, about two inches long, at right angles to the ileo-cecal juncture, having that point as its centre. The wound was sutured transversely, after the manner of the Heineke-Mikulicz pyloroplasty. The constipation in both cases has been relieved, as has also the pain in the right iliac fossa.

Fecal Tumor.—Poten " reports the case of a young girl, 19 years old, who complained of considerable abdominal pains. Examination revealed a large abdominal tumor of dubious character. It was thought to be either a dermoid or uterine fibroid. Careful examination showed that distinct depressions could be made with the fingers, and the diagnosis was then changed to fecal tumor. Repeated injections obliterated the tumor, and ten months later the patient was completely cured.

Pyometra from Congenital Occlusion of the Cervix.—J. Godart "records a case of pyometra whose etiology is unusual. The patient had presented the usual symptoms and physical signs of hematometra, never having menstruated, but suffering pain in the lower part of the abdomen every month. When pressure was made upon the abdominal tumor a small amount of pus appeared in the upper part of the vagina, and when this fistula was followed upward and dilated a quantity of pus escaped from the uterus. Recovery followed irrigation of its cavity. The writer supposes that a hematometra was formed, and through tension upon its walls a utero-vaginal fistula was formed, and infection entered by this route. The pus contained the *bacillus coli communis*.

Treatment of Renal Fistulæ.—J. Albarran 'presents an interesting paper upon the prophylactic and curative treatment of renal fistulæ following nephrotomy. These, he says, are due chiefly to the fact that urine flows through the wound more freely than through the ureter, on account of constrictions, curves, or a high insertion of the latter into the renal pelvis. To prevent the formation of fistulæ he secures the patency of the ureter in the following manner: By aid of the cystoscope a fine sound is passed through the urethra into the pelvis of the kidney, which is then incised. The sound is then employed to draw a No. 10 or 11 catheter from above downward through the ureter. If this is impossible the opening of the ureter may sometimes be found by inspection of the renal pelvis, and a catheter passed through this to the bladder, where its end is seized by a lithotrite and drawn out of the meatus. The catheter is left in place, and the kidney is drained through both this and the lumbar wound and irrigated through the catheter. After about a week the lumbar incision is closed, and a few days after any urine ceases to flow through the wound the catheter is also removed. If a renal fistula exists it can often be cured by cystoscopic introduction of a No. 6 or 7 catheter into the pelvis of the kidney. At intervals of a few days the size of the catheter is gradually increased to No. 11 or 12, passing it from below upward. When the fistula is entirely closed the ureteral drain is removed.

Renal Tuberculosis.—Otto G. Ramsey "has come to the following conclusions concerning renal tuberculosis: That renal tuberculosis may be classed as a semi-malignant form of inflammation, and that for this reason surgical treatment is always indicated. This surgical treatment will have a palliative or curative end in view, depending on the condition of the patient and the duration and extent of the disease. Nephrotomy is to be classed as a palliative operation, and that as a palliative operation for the immediate relief of dangerous symptoms, and as not precluding a later nephrectomy, nephrotomy with drainage of the abscess is most valuable. Resection of the diseased part of the kidney is contraindicated. Nephrectomy or nephro-ureterectomy is indicated in every suitable case, and in suitable cases should be followed by a lasting cure in 55.5 per cent of the cases.

The indications against nephrectomy are tubercular or other disease of the second kidney or tubercular foci in other organs. Tuberculosis of the bladder is not to be considered a contraindication to nephrectomy. A small foci in the lung, if the patient otherwise is in good condition, may sometimes not be considered a contraindication. In doubtful cases, when the patient is in poor condition, it is better to do a nephrotomy followed later by nephrectomy. The clamp method of controlling the pedicle is contraindicated from the danger of hemorrhage after the removal of the clamp. It is safest to remove the ureter with the kidney, as a persistent fistula may give trouble. A certain proportion of these fistulae will finally disappear, either after the removal of a deep suture or because of the slow disappearance of the tubercular disease in the ureters. We may expect a steadily increasing number of final cures as our means of diagnosis improve and as our surgical technique is carried out more carefully and scientifically.

Mesenteric Cysts.—The occurrence in the transverse mesocolon of a multilocular cystadenoma which contained pseudomucin, and which was exactly like a cystadenoma of the ovary, suggests to C. N. Dowd " its probable origin as an embryonic ovarian sequestration. The occurrence of dermoid cysts in a similar position suggests a similar origin. The occurrence of chylous cysts in the mesentery which have the structure and appearance of ovarian and parovarian cysts, and which have in their walls lymph vessels, suggests embryonic cysts into which there has been an effusion of chyle. The sanguineous cysts appear to be preformed cysts into which hemorrhage has taken place; hemorrhage in the mesentery should not be described as a cyst. The presence of cysts which have the structure of the intestinal wall suggests sequestration from the intestine. Serous cysts are apparently similar in origin and structure to the cysts already considered. Hydatid cysts form a class by themselves and are due to the *tenia echinococcus*. It is probable that all mesenteric cysts may be included in the classifications: (1) embryonic, (2) hydatid, or (3) cystic malignant disease.

Implantation of the Ovary after Salpingo-oöphorectomy.—Mauclaire' discusses the conservative treatment of the class of cases in which it is necessary to remove ovaries which are quite or nearly healthy, on account of adhesions to diseased tubes. Reviewing the literature of this subject, he shows that in animals intraperitoneal or subcutaneous implantation of the animal's own ovaries is usually successful, while those transplanted from others usually atrophy. Those implanted in males of the same species, however, generally live. In some cases ovaries have been employed in women, using their own or those of others. The writer has attempted in seven cases to avoid the symptoms of ovarian insufficiency following double salpingo-oöphorectomy by subcutaneous implantation of the patients' own ovaries. In four cases imperfect asepsis required their removal. One woman was exam-

ined three months later, and the transplanted ovary could be felt, much diminished in size. She had menstruated twice since the operation. In another instance the ovary could be palpated two and a half months after implantation.

Pozzi ' thinks the alleged symptoms following castration are much exaggerated. He believes in neither partial conservation of the ovary, nor its transplantation, nor the treatment with ovarian extract. He says that transplanted ovaries, deprived of their own source of nutrition, always atrophy. Many postoperative pains are caused by buried peritoneal sutures.

Jayle ' insists that in many cases the symptoms of ovarian insufficiency exist before operation, on account of disease of the ovaries, but no search is made for them. He advises careful inquiry before castration, before drawing conclusions as to the cause of such symptoms.

Ovarian Cyst in a Child.—Guyot " reports the removal of an ovarian cyst weighing twelve pounds from a girl 14 years of age. The tumor had caused no symptoms and was discovered by accident. Menstruation had not yet occurred.

Use of Ovarian Extract in Neurasthenia of Women.—E. Vidal ' has obtained very satisfactory results in the treatment of neurasthenia of women, without lesions of the genital organs, by hypodermatic injections of ovarian extract. After about six injections of three to five cubic centimetres the symptoms began to disappear.

Conservative Operations upon the Ovary.—In cases of doubt as to the condition of an ovary, E. Vidal " favors exploratory oöphorotomy—complete division of the ovary from end to end. If it is found diseased it is removed; if sound, it is sutured. As showing the harmlessness of this procedure, Vidal reports a case in which it was performed upon the left ovary, a stricture of the tube near the outer end treated by salpingostomy, another, more internal, by salpingoplasty, and the appendages of the right side removed. Fifteen months later the woman gave birth to a child.

Fibroma of the Ovary.—Ledoux " reports a case of pure fibroma of the ovary weighing nearly three and a half kilogrammes. Death occurred after its removal, from septic peritonitis, the only symptoms of which were restlessness, delirium, and slight purulent discharge from the wound with localized abdominal pain.

Torsion of Pedicle of Ovarian Cysts.—Voituriez " cites as etiological factors dual tumors of the same kind, coexistence of pregnancy, of a uterine fibroid, or of a tumor of a neighboring organ, difference of density and thickness of the cyst wall at different points. The actual rotation of the tumor may be due to a blow upon the abdomen, changes in the position of the body, or to a change in the cyst itself, such as rupture of a portion, altering its centre of gravity. He calls attention to the fact that after torsion of a cyst a movement in the opposite direction may suddenly occur, thus giving rise to acute

symptoms of torsion with rapid disappearance. Voituriez reports a case of coexistence of pregnancy and ovarian cyst, with relaxation of the abdominal wall after labor and torsion of the pedicle, cured by ovariectomy. He also records a case of dermoid cyst of both ovaries, with torsion of the pedicle of each; recovery after their removal.

Discussion on Fibroids.—Alban Doran, "in discussing the nature of fibroids, draws attention to several facts: that we are not yet agreed about their pathological and physiological relation to the ovaries; that they are sometimes accompanied by menorrhagia, metrorrhagia, and normal menstruation; that some that are slow-growing may take on sudden growth, and *vice versa*; that fibroids tend to grow smaller about menopause. As to the best plan of operation, he prefers the retroperitoneal hysterectomy. He believes that removal of both ovaries does not entail very formidable results.

D. B. Hart "thinks the two best methods of operation are supravaginal amputations as described by Kelly and panhysterectomy according to Doyen.

W. J. Smyly prefers the methods introduced by Doyen, both abdominal and vaginal.

H. Cripps believes that the mortality is greater than one would believe from statistics. He believes that the three most important improvements in methods of treatment are as follows: (1) better knowledge of antiseptics; (2) the intraperitoneal treatment of the stump; (3) the Trendelenburg position.

A. V. Macan uses the supravaginal amputation, the patient being in the Trendelenburg position.

I. H. Cameron "draws attention to the uncertainty of the diagnosis of uterine fibroids in some cases, and therefore the uncertainty in giving a prognosis. He favors the method used by Kelly of removing the uterus.

W. R. Williams "reckons roughly from statistics that in England there are 500 deaths from myomata per annum; the mortality from this cause for the whole community would be 1 in 2,000, which he accepts as approximately correct; at any rate, the mortality is not higher. It follows from the foregoing that if the practice of some surgeons (in removing myomata whenever recognizable) were generally followed, nearly a million extirpations would be done in a single year. The average mortality of the operations may be estimated at about 10 per cent; this means about 100,000 deaths in a single year, whereas if left to its natural course not more than 500 lives would be lost. To justify the removal of these tumors there must be some urgent indication.

Ed. S. Bishop believes that medicine, baths, etc., are absolutely useless.

J. Campbell says a word in favor of calcium chloride and hydrastis canadensis in controlling hemorrhage in inoperable cases. He believes that the vaginal method is the ideal method, for both patient and surgeon. Whatever method is adopted, the less cervix we leave the better.

Mrs. Stanley Boyd leaves one ovary in place, if possible.

Mrs. M. G. D. Scharlieb leaves the ovaries, if healthy. She prefers the abdominal hysterectomy in the Trendelenburg position.

A. E. Giles agrees with Dr. Smyly as to the advisability of removing as much of the cervix as possible, though he does not think it necessary to remove it all. He also believes that it is better to leave one or both ovaries, where possible.

H. Briggs said that as sutures of the cervical tissues were to be avoided, a simple plan was to pass two sutures of fine silk or catgut vertically on each side of the cervix; these sutures, when tied, brought together the serous covering of the cervical stump and checked the small residual bleeding, which often continued from the close of the operation. After thirteen years of experience of Apostoli's treatment, Skene Keith has no hesitation in saying that it is a good treatment.

W. S. A. Griffith is convinced that the rule in the very great majority of cases is for the fibroid not only to cease to increase, but to steadily diminish in size in a marked degree, and for the symptoms due to the growth to cease. He also speaks favorably of calcium chloride in the stopping of hemorrhage.

Enucleation of Uterine Fibroids.—Under cerebro-spinal or medullary anesthesia S. Tuffier "opens the abdomen. If the uterus is rounded with a more or less distinct tumor, the fundus is incised down to the latter in the median line anteriorly and the fibroma extracted. If the tumors are multiple the same incision of the uterus is employed and the fibrous nodules are attacked as far as possible through this. Multiple incisions are sometimes necessary. After removal of the tumors the uterine tissue usually contracts and the cavities remaining are small. If the uterine cavity is not opened the incision of the uterine muscle and peritoneum is closed. If the uterine mucosa is involved a large hard-rubber drainage tube is inserted from the cavities into the vagina, and, if necessary, Douglas' cul-de-sac is also drained. In closing the uterine wound a buried catgut suture with a row of Lembert sutures is employed. If the operation has been very laborious the uterine is sewed to the abdominal wound.

Early Recognition of Cancer of the Uterus.—William H. Humiston "thinks that an early differentiation of malignant growths of the cervix should be made, the adenocarcinoma being by far the most to be dreaded. Careful consideration of the importance of the lymphatic vessels and glands in their capacity of drains of the different portions of the uterus is of great importance. Abdominal section with complete removal of these groups of lymphatics alone offers in suitable cases the chance against recurrence of carcinoma, particularly when the cervix is affected.

Treatment of Cancer of the Uterus.—G. Richelot¹ first discusses vaginal hysterectomy for cancer of the uterus, which he characterizes as rational, benign, and efficacious. He par-

ticularly condemns those who claim to be able to thoroughly remove the diseased tissues by abdominal hysterectomy after the process has extended beyond the uterus. He holds that a vaginal operation performed early may entirely remove the new growth, while after its extension beyond the uterus the abdominal operation may fail to excise it entirely.

Dmitri d'Ott' also advocates vaginal hysterectomy, the mortality following this operation being less than two per cent.

T. S. Cullen¹ advises the abdominal operation in all cases of carcinoma of the cervix, unless the patient is excessively stout. To avoid the transplantation of carcinomatous tissue he employs the technique of Werder, who removes broken-down carcinomatous cervical tissue, preferably a few days before. Ureteral bougies are inserted if desired, the ovarian vessels and round ligaments ligated, and the bladder freed from the uterus and broad ligaments. The latter are then opened and the ureters located and freed to the points at which they enter the bladder. The uterine vessels are ligated near their points of origin, and the bladder and then the rectum dissected from the vagina. The pelvic lymphatic glands are removed, the vaginal fornices freed, and the pelvic cavity closed by uniting the vesical peritoneum with that of the rectum while an assistant draws down the cervix. The abdomen is then closed, and subsequently the vaginal vault is ringed with a thermo-cautery or knife, freeing the uterus and adjacent tissue. A light gauze packing is placed in the space thus formed.

William R. Pryor² has written a paper in which he endeavors to show as forcibly as he can the uselessness of vaginal hysterectomy, and to present to the profession the urgent necessity of reviewing our work and adopting that operation which will enable us to make the broadest dissection, to remove the most tissue, to remove all tissue in which recurrence is liable to take place in a bloodless field, and prevent introduction of the germs into the absorbents during the operation.

John B. Deaver³ favors and performs abdominal hysterectomy for the great majority of cases of uterine carcinoma. He gives the following reasons for preferring the abdominal route: There is a better chance to remove all involved glands and a better area for complete extirpation of carcinomatous tissue. There is less danger of damaging the ureters. There is less danger of hemorrhage, both at the time of operation and afterward. The danger of infecting the peritoneum is lessened and there is no danger of prolapsing bowel. Vaginal hysterectomy is only applicable in those cases in which the growth is limited to the vaginal portion of the cervix and where no adhesions are present, the uterus being freely movable.

M. G. D. Scharlieb⁴ advocates vaginal hysterectomy in cases where the growth has not extended beyond the uterus or the disease has not infected the glands or distant organs. Grave constitutional states are also a contraindication.

R. B. Hall⁵ describes a method of removing the uterus by

ligating the broad ligaments little by little. He starts on the healthy side and places a ligature, taking in a portion of the broad ligament not larger than a lead pencil. These sutures are placed alternately, first on one side, then on the other, and so placed that the tubes and ovaries are removed. Preparatory to the operation the cervix is cauterized and the vagina thoroughly cleansed and irrigated with a 1 : 1000 bichloride solution. An incision is made around the cervix about half an inch from the diseased area, and the tissues dissected away from the uterus, then the sutures placed.

Deciduoma Malignum.—Daniel Pelligrew¹¹ describes a case of this disease occurring in a woman 26 years old. At the time she came to the physician she was suckling her baby, and supposed that was the reason of her run-down condition. The patient lost weight, looked haggard and weak; there was pyrexia, a fast pulse, loss of appetite, and menorrhagia. Later the hemorrhage became foul-smelling. The patient finally submitted to operation three months after she first consulted her physician. A vaginal hysterectomy was performed, but the growth had extended beyond the uterus. The patient died two months later. The microscopic examination of the uterus showed clearly a rapid-growing malignant tumor of probable sarcomatous nature. This is essentially a postparturition disease, and in the majority of cases occurring in young women.

Angiosarcoma of the Vagina.—E. Schwartz¹² furnishes an account of a rare and interesting case. His patient, 24 years of age, menstruated at 16, had what was probably an abortion at 18 and a normal labor at 23. Menstruation was then absent for five months during lactation, returned, and again stopped for two months. One month before Schwartz first saw the woman she had what her physician considered an abortion, and since then continual profuse metrorrhagia. Upon examination she was found profoundly anemic; the vagina was filled with blood clots, and an arterial jet issued from an ulcerated surface, the size of a five-franc piece, in the right cul-de-sac. A smaller ulcer was situated upon the anterior vaginal wall. The cervix was not involved. Attempts to clamp the bleeding point failed, and tampons alone checked the hemorrhage, which recurred in spite of these six days later, and cauterization with renewal of the tampons was followed by death. Postmortem examination showed two other small nodules in the lateral vaginal walls. Microscopically the growths were found to be angiosarcomata. The writer discovered reports of five other cases of this character, hemorrhage being the chief symptom in all, and recurrence taking place in all operated upon. Early removal seems to offer the best chance of life. If, as in the case reported, the lesion is too extensive, Schwartz thinks that ligation of the hypogastric arteries might offer temporary relief from hemorrhage, if the exsanguinated patient survives the operation.

Replacement of Peritoneum after Removal by Operations.—Amann¹ writes that it is frequently necessary to

remove large portions of the peritoneum in operations upon the pelvic organs. Such losses of tissue he repairs either by transplantation of the neighboring peritoneum or by covering the denuded area with viscera themselves lined with peritoneum. The sigmoid is the organ most frequently employed, its mobility permitting its use at either side of the pelvis. If the uterus has been removed, Amann sutures the sigmoid to each lateral wall of the cavity of the pelvis, and the anterior surface of the intestine to the bladder or to the anterior abdominal wall. The sutures used are fine catgut. In 50 such cases the writer has never observed any in which there were symptoms due to tension upon the sigmoid.

Adenosarcoma of the Breast at the Menopause.—R. Desplats describes a case of adenoma of the breast of ten years' duration, which underwent a sarcomatous change within a few months after the menopause. The case is reported as showing the influence of the menopause upon the benign tumor.

Gastric Disturbances of the Menopause.—Dalcé discusses the various forms of gastric disturbance to which women are subject at the time of the menopause. The two etiological factors upon which these depend are ovarian insufficiency, of which comparatively little is known, and periodical congestions which aggravate any existing gastric disorders. In general, each form of dyspepsia demands its usual treatment. To prevent the congestive attacks, meals should be taken regularly, and that of the evening should be light. All irritating food should be avoided, especially alcoholic beverages and articles which easily cause fermentation. The daily use of milk is advised, as well as regulation of the bowels. For the attacks one may employ mustard foot baths, hot sitz baths, and dry cups over the lower part of the chest posteriorly and the kidneys. Leeches may be applied to the inner surface of the knees, the thighs, lower parts of the abdomen and epigastrium. This treatment should be begun some days before the expected attack, that is, twenty-six to twenty-eight days after the last. In the intervals hydrotherapy is of value. Ovarian extract may prove useful.

Hemorrhage occurring after Menopause.—E. C. Davis, in speaking of hemorrhage occurring after menopause, calls especial attention to the hemorrhage which occurs early in malignant growths of the uterus. He believes that this danger signal should be more fully appreciated and an earlier diagnosis made, so that a radical operation can be done early. The other causes of hemorrhage he speaks of are granular endometritis, atheroma of the uterine blood vessels, vasomotor relaxation, uterine polypi, myofibromata.

In the majority of women, says Theilhaber, "menstruation with the advent of the menopause gradually lessens in quantity, the intervals at the same time growing longer until finally they cease altogether. A small percentage, however, gives a different history. Here the loss of blood grows more profuse,

the duration of the flow is longer, and the quantity lost is greater. In many of these cases, after careful investigation, the cause for the menorrhagia is found in a new growth, either cancer or sarcoma or mucous polypi. Inflammation of the adnexa in young women, a frequent cause of excessive menstruation, is a rather rare cause in women advanced in years.

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DISEASES OF CHILDREN.

Analgesia in Children by Spinal Injection.—William Seaman Bainbridge¹ gives a report of seven cases in which he availed himself of this procedure. He also reports a new method of sterilization of the injection fluid. The cases were not specially selected. The patient was placed in a sitting posture, well bent forward, and prevented from moving during the injection. After the skin over the site of puncture had been treated in the usual antiseptic way, an ethylchloride spray was employed, rendering the introduction of the needle practically painless. A point one-half inch to either side of the median line and midway between the spinous processes was taken, and the needle pushed forward, inward, and upward. Special attention was paid to keep away from the central part of the spinal canal by a close relation of the needle point to the dura. The injection was given slowly, usually taking one and a half to two and a half minutes. Often the first evidence that the cocaine was taking effect was some dilatation of the pupil or a slight nausea. There seemed to be no loss of motor power, and the ability to detect heat and cold and the muscular and tactile sense were retained. As many

cases of failure had been reported which were attributed to the use of heat in sterilization of the injection fluid, the writer employed the following method, which has been satisfactory so far: About a drachm of ether is poured over five grains of powdered cocaine or eucaïne in a measuring glass which has been boiled. The ether is thoroughly mixed with the powder until all ether has disappeared. Then one ounce of boiled filtered water is added. The author prefers cocaine.

Carcinoma of the Pharynx.—J. M. Elder¹ presents the report of a case, accompanied with marked involvement of the cervical glands, in a boy 14 years of age. The mother of the child developed signs of cancer when he was 4 years old, and died two years later. In the boy's case a striking feature was the slow growth of the carcinoma, the first signs having been noticed over a year before the presentation of the case. It was thought by some that the cause of the trouble might have been a pre-existing catarrh or the remains of an old adenoid ring.

Convulsions in Children.—Montague Murray¹ writes that it is frequently impossible to make an exact diagnosis on the day the fit occurs. If an opportunity is afforded for observing the convulsion, the following points should first be noted: Whether the attack involves all the muscles generally; whether the convulsed parts are affected with uniform intensity; whether consciousness is absolutely lost, or to what extent the child can be roused; whether there is any change in color—pallor or cyanosis; and whether the rectal temperature is much raised. When these points have been noted, the previous history should be ascertained, including the age of the patient, the condition of its previous health, and the exact character of the onset of the present attack. Inquiries concerning the previous health should include the possible occurrence of previous fits, and the existence of sore throat, rash, whooping-cough, improper ingesta, vomiting, constipation, headache, and giddiness, and, in infants, rolling and retraction of the head. Ascertain also the part first affected at the onset of the attack. Examine the hands and feet for edema and desquamation, the chest for signs of rickets, collapse of the lung, or pneumonia. As soon as the attack has subsided examine the limbs and the face for paralysis. If the mouth and urine are normal, the ears must be carefully examined. After twenty-four hours the temperature should again be taken, an ophthalmoscopic inspection made, and any deviation from the normal noted. Even when due to local disease in the brain, convulsions in a child are usually general. If, however, the onset should be local, the distribution partial, the consciousness even for a time retained, and any weakness of the convulsed parts result, local disease of the brain or spinal cord is undoubtedly present.

Diphtheria Bacilli found in a Case of Suppuration.—Hala¹ reports the case of a rachitic girl, 5 years old, who had a walnut-sized swelling on the left upper eyelid communicating

with a smaller swelling under the eye. On incision a chocolate-colored, thick mass exuded, and a few drops of pus from underneath the muscle. Fascia and muscle in the wound were distinctly necrotic. Repeated culture and animal experiments proved the bacteria cultivated from the pus to be Klebs-Löffler bacilli. The entrance point for these bacilli was found in the carious teeth, one of which, after extraction, showed a softened pulp mixed with pus, from which pure cultures of diphtheria bacilli were grown, so that the infection spread, either by continuity or by the lymphatics, from a periostitis of the lower jaw upward to the eyelid, involving the whole left cheek. The abscess perforated into the mouth above the left canine fossa.

Enterocolitis.—William E. Fitch* says that treatment should be directed on the following lines: (a) The child's health must be sustained, and in all efforts to cure the disease its general welfare must never be lost sight of nor its frailty overlooked. (b) The intestinal contents must be evacuated. (c) The diet must be regulated. (d) Special symptoms must be combated. (e) We must select an intestinal antiseptic. For the evacuation of the intestinal contents the writer finds calomel the most valuable drug. Then, to rid the bowel of the pathogenetic micro-organisms, keep out of it the food on which they thrive. To withhold all food for twenty-four hours or longer will accomplish the desired result, but is not free from objections. It would be preferable to discover the offending food and withhold it. When the stools are putrid they indicate the decomposition of proteid material which should be withheld. Milk is the proteid food usually allowed, when this is stopped give a modification of Jacobi's mixture (five ounces barley water, white of one egg, one or two teaspoonfuls of brandy or whiskey, sugar and salt) made by adding *pulveris myristicæ*, twenty grains, which acts as an anodyne, allaying intestinal spasm and relieving sick stomach. Of this mixture a teaspoonful is given every five or ten minutes. A drug which the writer considers almost an ideal disinfectant is tannopin. This is not absorbed or decomposed in the stomach, but separates into its constituents, tannin and urotropin, only under the influence of the alkaline intestinal contents. The tannic acid of the compound unites with the albuminous substances, forming albuminates; contraction of the connective tissue results, diminishing reflex activity and sensibility of the muscular tissue. Urotropin acts as a disinfectant and increases the secretion of urine. It is free from odor and its action is prompt. It can be given dry on the tongue or combined with chalk mixture and bismuth subnitrate. The dose is 0.2 to 0.5 gramme (three to eight grains), administered every three or four hours to children. Given by the mouth and administered per rectum, it exerts a doubly curative influence. One drachm of tannopin to one pint of sterilized water and one ounce of aqua calcis, used with a long rectal tube, washes and cleans out the colon, and is easily

absorbed by the inflamed lymphoid tissue. Tannopin is an efficient medicament in all forms of enteritis, colitis, and inflammatory intestinal disorders.

Facial Diplegia following Middle-ear Disease.—Luther C. Peter¹ writes that facial diplegia is a comparatively rare phenomenon, most cases occurring in advanced adult life. Of the causes ascribed to the condition—including middle-ear disease, disease of the nuclei, syphilitic and other diseases of the nerves at the base of the brain, pontine disease, congenital affections, birth injury, cold, and toxins—middle-ear disease is perhaps the most frequent cause. This is especially true of children, because they are predisposed to conditions which frequently give rise to middle-ear disease. In childhood the changes are less marked because of an abundance of subcutaneous fat. The face is immobile, but the normal outlines are fairly well preserved by the supporting fat. The exact location of the lesions is difficult to determine, and the diagnosis must depend on the presence or absence of taste on the tip of the tongue, the amount of salivary secretion, the condition of hearing, etc. The treatment should be directed primarily to the cause.

Heart Ganglia, Changes in, during Miliary Tuberculosis in Children.—Gundobin¹ studied the cardiac ganglia in seven cases of tuberculous children, the oldest being 2 years and 8 months of age. The material was stained by Nissl's method. The results showed that under the influence of the tubercle toxin the cells of the automatic heart ganglia change their size and shape, and disappear in places to make room for connective-tissue elements. The Nissl granules are not distributed according to any special order, but may be scattered irregularly throughout the cell or heaped up in places; the intensity of the stain also varies. The nuclei may lose their contour almost entirely and may reach the periphery. The connective-tissue elements of the surrounding stroma are increased and may penetrate the capsule. The blood-vessel walls may be somewhat thickened and their lumina filled with formed elements.

Heart Disease or Epilepsy.—F. Savary Pearce¹ presents the following points in conclusion as to early recognition of the significance of syncope. There is, in a minority of cases of "heart failure," so-called, difficulty in discerning the true origin of the cardiac symptoms. Organic heart disease would be a sign, in a difficult case with a comatose mental state during the spell, that the syncope was entirely of cardiac origin. Rarely is organic disease of the heart the cause of convulsions, except those due to emboli, in which case paralysis or death usually follows the spasms. The less frequent and variable the apparent unconsciousness during an attack of syncope, the more likely the hysteroid nature. The condition in children is most difficult of diagnosis. The presence of a slow, full, and irregular pulse, with or even without unconsciousness, makes more likely the epileptoid nature of the case. Leaky skin and cold extremities are more in favor of hysteroid-anemic cases.

The absence of pain in any case eliminates angina. Cyanosis is not common, except in the organic heart cases. A tendency to rigidity without convulsion is in favor of hysteria being the background of the clinical picture.

Hereditary Progressive Spinal Muscular Atrophy in Childhood.—Hoffmann⁹ describes the disease as occurring in infants of healthy parents, who develop in the normal way until they are from 5 to 9 months old, when a weakness in the hip-joint movements appears and gradually leads to loss of motion in the thighs and pelvis. No infectious disease and no convulsions mark the onset, which is very gradual. After months or years the muscles of the back, neck, shoulder girdle, and legs become involved, and finally all voluntary motion passes into a stage of more or less marked paralysis, only the face, tongue, and pharynx muscles remaining free. Atrophy begins early, involving even the small muscles of the hand. The tendon reflexes are absent almost from the outset. Sensibility remains unaffected, and the children are usually brighter than the average. The prognosis is always fatal, death occurring in from one to four years, chiefly from pulmonary affections due to the paralysis of the thoracic muscles; the heart and kidneys are, as a rule, not diseased. Bulbar symptoms do not occur and pain is not a marked symptom. Microscopically the lesion is a marked, symmetrical degeneration of the peripheral neuron of all motor nerves below the hypoglossal, including the spinal accessory, and a marked muscle atrophy (with or without fatty degeneration) in the regions supplied by those nerves. The posterior nerve roots, the white matter of the cord, and the brain are normal. Treatment (baths, strychnine, quinine, electricity) is useless. The diagnosis is easy; the disease cannot be mistaken for any other.

Hyperchlorhydria in Infancy.—Knoepfelmacher¹⁰ examined the gastric contents of a 10-months-old girl baby who suffered from marked constipation and vomiting. She had been breast-fed for seven months. Marked hyperchlorhydria and motor insufficiency of the stomach were found. Complete cure was effected only after several weeks' treatment, the stomach being washed out daily with Carlsbad water and later with physiological salt solution, and the child fed on undiluted cow's milk. It seems probable that there was a spastic stenosis of the pylorus in this case, resulting from the hyperacid condition.

Hysteria in Boys and Youths.—Arthur J. Hall¹¹ gives a number of cases in which hysteria simulated cerebellar tumor, cerebral injury, cerebral tumor, meningitis, Jacksonian epilepsy, and lightning stroke. Hysteria in boys is not so uncommon as we are apt to think, but is not so readily recognized as in girls. The children are often bright and intelligent, and the somewhat spoiled pets of the family. An inquiry will often show that unhappiness in their surroundings, either at school or at their work, is the primary cause, and some slight illness or injury the immediate starting point. The diagnosis

of their true condition is sometimes quite easy, sometimes very difficult. Even if simple it is often wiser to keep it to yourself, provided that you let the patient know that you know. If you tell the patients what you think, they are not always grateful. The most striking difference between the hysterical boy and the hysterical girl is that the former does it much more purposely. At least it appears so. The difference is partly due to the difference in surroundings of the two. The boy has to live among boys, and knows how his fellows would tease him for any "girlish" tricks, hence he dreads discovery and "plays the game" with greater thoroughness.

Lymphatic Anemia in Children.—Alexander MacGregor¹¹ describes this form of anemia, not uncommon in children. The disease runs a very chronic course and recovery is the rule. The history of the cases shows that the glandular affection is in no way connected with those enlarged glands which usually become tuberculous, and the characteristic adenitis and the chronic course mark it sharply off from glandular fever. The anemia may or may not be marked, but it is easily recognized. The adenitis is always marked, but it is easily overlooked because none of the glands are large enough to attract the eye. The glands are small and hard, and are always numerous in the cervical triangles and in the groins. The axillary glands are never affected. The bronchial glands usually are affected, as one may infer from the fact that cough is in many cases a troublesome symptom when there is nothing in the lungs to cause it. The mesenteric glands are probably also affected, but abdominal symptoms are rare. In many cases the spleen is distinctly enlarged. Catarrhal pneumonia of one or both bases is not uncommon. Examination of the blood shows a decrease of the red and a large increase of the white corpuscles, and of the latter the increase of the large uni-nucleated corpuscles is very striking. Nothing of interest can be gained from the family history. There is always a history of gradually failing health; the child becomes listless and easily fatigued, loses flesh, and becomes anemic. Cough is frequently a troublesome symptom, and it is usually worse at night. Occasionally there are night sweats. There is loss of appetite, the tongue is usually clean and the bowels constipated.

Measles.—Felix Serinelli¹² describes an epidemic of measles which occurred at Septèmes, and draws the following conclusions in regard to the disease: Measles is, as a rule, benignant, but in unhygienic surroundings, or when acting upon an enfeebled organism, may be virulent and even fatal. It is extremely contagious. Relapses are liable to occur, just as in typhoid fever. Treatment should be simple, and consist chiefly in the application of hygienic measures, ventilation, and cleanliness. Hot baths at 100.4° F., lasting seven or eight minutes, are of value where there is fever, nervous excitability, or intestinal complications, or where a revulsive effect is desired. The patient should be put upon a strict milk diet

throughout the whole sickness, solid food being allowed only when an examination of the urine gives negative results, and the house must be kept until fifteen days after disappearance of the eruption. Systematic washing out of buccal and nasal cavities and of the vulva several times a day with antiseptic fluids will often prevent unpleasant complications.

Melena Vera, Is There a?—Swoboda¹¹ believes that his findings in four cases of melena, in which the nasal cavity was the origin of the fatal hemorrhage, have invalidated almost every published case, and that it is no longer possible to accept the older view of a melena vera (without anatomical lesions). In order to prove that melena vera exists, it will be necessary for a case to show a complete examination of the mucous membrane of the mouth, nose, trachea, and entire digestive tract, also of the cranial contents; and every general disease which may cause hemorrhage in the newly-born must be excluded (Buhl's disease, syphilis, sepsis). The name melena can only be used to express a group of symptoms, not a disease *sui generis*, and therefore cannot be scientifically given as a cause of death. No autopsy on infants is complete without an examination of the nasal cavity.

Membranous Anginas produced by Micro-organisms other than the Klebs-Löffler Bacillus.—William G. Bissell¹² writes that prior to the more exact microscopic methods for the determination of a diphtheritic infection, there were several varieties of pseudo-membranous inflammation of the tonsils classed as diphtheria which by recent research have been conclusively demonstrated to be produced by micro-organisms other than the Klebs-Löffler bacillus. The appearance of the membrane in these conditions is not dissimilar to that produced by the Löffler bacillus, and the constitutional disturbance may be such as not to be capable of differentiation from that usually attending a severe case of diphtheria. From some reports of cases it may be concluded: 1. The streptococcus pyogenes and the micrococcus of sputum septicemia can produce membranous anginas accompanied by physical disturbances sufficient to result in death. 2. The oidium albicans produces pseudo-membranous exudates easily mistaken for a Klebs-Löffler inflammation. 3. The only positive means of determining a Klebs-Löffler infection is by microscopic methods. 4. From a sanitary standpoint, as regards quarantine, anginas due to the streptococcus pyogenes, micrococcus of sputum septicemia, and the oidium albicans require little consideration.

Meningococcus Intracellularis, Diagnostic Importance of.—Louis Fischer¹³ writes that his experience with tapping the lumbar canal has been rather favorable from both a diagnostic and therapeutic standpoint. In some instances temporary, if not permanent, relief has been given. A microscopical and bacteriological examination of the fluid should always be obtained in meningitis in order to ascertain what organism is present. It is generally believed that all infections of the

meninges other than by the diplococcus cellularis are fatal. The bacteriological examination of the purulent fluid aspirated will readily show which form of meningitis we are dealing with, whether the epidemic or sporadic cerebro-spinal meningitis. The epidemic cases are always very lengthy, lasting weeks and frequently months. The sporadic type ends fatally in about four to five days.

Parrot's Disease, or Syphilitic Pseudo-paralysis of the Newly-born.—Théophile Fornari¹⁴ thus sums up his thesis: 1. The complex of symptoms to which the name of Parrot's disease is given is an isolated manifestation of hereditary syphilis. 2. It is the pain caused by attempted moving of the limbs which causes their lack of power, a solution of continuity of the bony levers also contributing to this end. 3. The disease is frequently cured, especially when the child's environment is hygienic. Death occurs only from syphilitic cachexia or from the visceral lesions which often accompany the disease. 4. The symptomatology is very distinct. It consists of an apparent paralysis of the limbs, the nervous and muscular systems being unimpaired. The muscles retain their powers of contraction, but the slightest motion causes intense pain. Slight crepitation and swelling are often noticed near the epiphyses. 5. Treatment should be begun promptly, and consist of the administration of twenty drops of Van Swieten's liquor in twenty grammes of distilled water, a teaspoonful to be given every six hours, immediately after nursing. Ten grammes of the syrup of lactophosphate should be given daily, to aid in the development of the bony system. 6. The mother's milk is the best food, but should that not be possible to obtain, the infant should be bottle-fed, to avoid the danger of infecting a wet-nurse.

Primary Splenomegaly.—David Bovaird¹⁷ reports two cases in children with an autopsy and morphological examination in one of them. Upon the basis of his observations the author believes that: 1. The affection first described by Gaucher as primary splenomegaly, or primary epithelioma of the spleen, is a definite and distinct disease. 2. The process is not a new growth, but an endothelial hyperplasia of the spleen, and that it may be associated with like changes in retroperitoneal and mesenteric lymph nodes and the connective tissue of the liver. The symptomatology of the affection may be summarized as follows: 1. Enlargement of the spleen, beginning in childhood (second to seventh year), slow, progressive. 2. Enlargement of the liver, secondary to that of the spleen, may be considerable, but never reaches the extent of the splenic affection. 3. Simple anemia. The only changes observed in the blood are those associated with any chronic enlargement of the spleen. 4. Softening of the gums with oozing of blood. 5. Epistaxis repeated. Osler has noted the association of this symptom with chronic splenic enlargements. 6. Cutaneous hemorrhages and icterus, present in Gaucher's case, not in the writer's. 7. Symptoms referable to the mechanical effect of

the splenic enlargement: pain in abdomen; disturbances of the functions of the stomach and bowels; dyspnea; dysuria; cramps in the legs. 8. Earlier stages of the disease may be overlooked, and the first evidence of the enlargement of the spleen be the effect of its own weight. 9. The problem of the clinical differentiation of cases of the type herein reported from splenic anemia must be left to future experience.

Pulmonary Tuberculosis in Early Childhood.—Arthur Latham¹² believes that an infected milk supply plays a far more important rôle in the production of pulmonary tuberculosis than is allowed by most observers. The writer's impression is that both in the adult and in the child the primary infection is by means of the lymphatic system, and, up to the age of 3½ years, is often dependent upon the tubercle bacilli passing through either the upper or lower portion of the alimentary tract and essentially setting up changes in the bronchial glands. When infection takes place by means of the respiratory tract it follows the same path—*i.e.*, it passes through the lymphatics of the *upper* portions of the respiratory tract, and by means of them to the bronchial glands. The whole picture of adult pulmonary tuberculosis differs from what we find in the young child: in the former the process is usually chronic and accompanied by a production of fibrous tissue and an effort toward repair; in the latter the process is usually acute, there is seldom much fibrotic change, and the stage of cavitation and breaking down of tissue is comparatively seldom reached. In children we often find tuberculosis, sometimes advanced, in the bronchial glands, whilst the lungs are practically unaffected—a condition which is hardly ever met with in the case of adults. This difference in the course of pulmonary tuberculosis in the adult and in the child is more marked if we limit the age of the child to 3½ years, and may no doubt be accounted for by the more rapid growth of the tissues which takes place in the child. The curve of tuberculosis in the child commences at the age of 6 months, reaches its maximum about the second year, and undergoes a remarkable fall between the third and fourth years—that is to say, tuberculosis is most marked at an age when infected milk would have most play. Again, during the last twenty years the number of tuberculosis cases has been very considerably diminished by better hygienic conditions in every period of life except early childhood. We know that, although great improvement has been made in our hygienic conditions, no improvement has been made with regard to the sale of tuberculous milk. With regard to infection from the alimentary canal, we know that tubercle bacilli can pass through the intestinal membrane without leaving any trace of their entrance and yet cause tuberculosis in more distant parts, just as the bacilli can pass through the tonsils and give rise to tuberculosis in the deep glands of the neck and the bronchial glands.

It seems beyond dispute that the characters of pulmonary tuberculosis in very early childhood are radically different

from those which obtain after the age of 6 years. Until the child is 3½ years old tuberculosis is mainly dependent upon the infection of the bronchial glands, and spreads from these glands to the lungs, rather than from the lungs to the glands, as is the case in an adult. After the age of 4 years the lesions are more and more comparable with the types met with in adult life. The varieties found up to the fourth year may be classified as follows: 1. Tuberculosis of bronchial glands. 2. Miliary tuberculosis of lungs; this may be dependent upon (a) a rapid primary infection without any discoverable old focus; (b) the rupture of a tuberculous bronchial gland into a blood vessel with rapid dissemination throughout both lungs, more especially of the lower lobes; and (c) pulmonary infection secondary to other and older lesions, such as tuberculous disease of the testis, bone, etc. 3. Tubercular broncho-pneumonia. This may be dependent on: (a) the tubercle bacilli obtaining a hold upon a simple persistent broncho-pneumonia, and (b) direct spread by the lymphatics of the bronchi from a previously diseased bronchial gland. This third variety may go on, especially in the confluent form of broncho-pneumonia, to what Goodhart has aptly called cheesy consolidation, or it may, in rare cases, go on to a fibroid condition of the lung. In children who have reached the age of 6 years we may have, in addition to any of these varieties, (4) pulmonary tuberculosis which approaches the adult type, but differs in its distribution and in the fact that there is a diminished tendency toward the formation of fibrous tissue.

Rotary Lateral Curvature and Pott's Disease of the Spine.—In the course of some remarks upon this subject, A. M. Phelps and D. W. Manton¹⁹ state that rotary lateral curvature differs from tuberculosis of the spine. It is never produced by inflammation or disease of the spinal column. The etiology of these curves occurring in the dorsal or cervical region is nearly always congenital or rachitic. A rapidly growing child who sits in a faulty attitude, or stands in such a position as to constantly curve the spine, will often develop rotary lateral curvature. Curves that occur in the lumbar region are usually due to such a cause as this or to a shortened limb or tilted pelvis. Paralysis of certain muscles may also be an important factor in the etiology of these deformities. Intercoastal adhesions following the absorption of a pleuritic effusion have led to the condition. The deformity in lateral curvature is produced by the absorption of the vertebra from pressure. As the spine bends, rotation always takes place in the direction of the curves; therefore nearly all cases of lateral curvature are to be considered as cases of lateral rotary spinal curvature. The projecting shoulder blade, the drooping shoulder, the prominence of the ribs on one side of the vertebra—as the patient is bent forward—the absence of pain and spasm of the muscles, the general good health of the patient, are symptomatic of curvature. In case of tuberculosis of the spine, a diagnosis should be made before deformity occurs. In these

cases there will be night cries, screaming of the child when the mother lifts it, pain anteriorly from the point of disease when the body bends forward, a rigid spine when the patient is lifted to an upright position with the hand under the head, a rigid spine when bent forward from side to side while the patient is in a sitting position.

Scarlet Fever.—William J. Class²² calls attention to the fact that the germ described by Baginski and Sommerfeld in the etiology of scarlet fever is practically identical with that discovered by him and described in an article November 18, 1899, and subsequent articles. While it is possible that some discoverers really had the *diplococcus scarlatinæ* in their cultures previously, they at best only described one of its forms, and none proved the constant presence or the relationship of the germ to the disease. Neither did they reproduce the disease or show any way by which the germ could be distinguished from others. The author is certain of his ability to demonstrate the presence of the *diplococcus scarlatinæ* in the blood, throat secretions, and scales of every typical case of scarlet fever. The germ is pathogenic for mice, swine, and guinea-pigs. It is the first germ that has ever been discovered through whose agency a disease has repeatedly been produced which has been recognized by competent men as being apparently identical with scarlet fever as it appears in human beings, so far as the rash and scaling are concerned. Also, pathologic changes in the organs caused by this germ resemble those of scarlet fever, and there is evidence that the disease produced through its agency is of a contagious nature.

Sporadic Cretinism, Thyroid Treatment of.—Neumann²³ used the thyroid treatment in five cases of cretinism varying from 9 months to 13 years of age. The most striking effect was the disappearance of the myxedema and a consequent loss of weight, lasting four to six weeks, when the normal body substance began to be acquired with sufficient rapidity. The second effect was the increase in height, indicating a growth of the bones. In cases of cretinism the bones are usually in the stage of ossification present in a normal child of that height. The teeth are in the same state—that is, they are as numerous as is normal to a child of that size, if at its normal age. Throughout the treatment the bones and teeth conform to this rule, and the patient develops at a rate in keeping with his growth in size. But it is rare for the thyroid treatment to achieve normal development (complete cure) unless begun very soon after the onset of the disease in very young children. Two or three such cases are on record.

Tetanus, Case of, Cured by Tizzoni's Antitoxin.—Homa²⁴ reports the case of a boy 9 years old who had gangrene of the toes following frost-bite. Symptoms of tetanus developed. The gangrenous areas on both feet were amputated, and tetanus bacilli were cultivated from their secretion. For ten days after the operation there were repeated attacks of tetanic convulsions. Treatment consisted of injections of

Tizzoni's tetanus antitoxin and of clysters containing chloral hydrate. The convulsions reappeared after a dressing done on the sixteenth day, and again a week later. Finally cure was complete, and the boy walked without assistance four months after treatment began.

The Relative Infrequency of Acute Specific Infections in the First Year of Life, with a Probable Explanation for It.—A. C. Abbott" says that if the general mortality of a community be tabulated according to certain age-groups, we invariably find that the greatest number of deaths fall in the group comprising those individuals under one year of age. If in a similar manner we again tabulate the deaths from certain of the commoner *specific infections*, we shall now find that in this same group there is a very much smaller number of deaths; and if we further classify the deaths during this first year of life according to age by months, we find that the great majority fall in the second half of the first year. On first thought one might be tempted to say that during the early months of life exposure is less and that therefore the opportunities for infection are fewer; and in many cases this is true. Yet among the poor and destitute there are opportunities in abundance for infection. The author believes that the explanation lies in another direction. There are two hypotheses that appear to bear on the subject. One of these is Baumgarten's doctrine that in the new-born the bacillus of tuberculosis, if present, is prevented from developing and exhibiting its pathogenic functions through the antagonism of the actively developing tissues of the child. Whether this idea is applicable to other infective micro-organisms it is impossible to say, and even in regard to tuberculosis it has not met with universal acceptance. The hypothesis which most strongly appeals to the writer is that which comprehends the results of Ehrlich's investigations on the hereditary transmission of immunity. If a female animal (a mouse) be artificially immunized against vegetable poisons, she transfers to the young by way of the milk during the nursing period a something that protects her offspring from intoxication by the same poison so long as they are sucklings. The immunity conferred in this way is not permanent. Ehrlich found that it was fully operative up to about six weeks after birth, when it gradually became less evident, and by the fourth month had entirely disappeared. If we recall the fact that a large proportion of adult human beings have passed through some or all of the acute specific infections during the period of childhood or youth, and if we further recall the fact that in the majority of instances recovery from such attacks confers *permanent* immunity to the individual, it does not seem unreasonable to believe, in the light of Ehrlich's work, that a mother who has acquired a lasting immunity in this way may during the period of nursing—that is, during something more than half of the first twelve months of her child—convey to that child through her milk an agent that protects it temporarily against the same disease

from which she herself had in her youth recovered, and that with the cessation of nursing this protection is withdrawn.

The Relation of Artificial Feeding to the Gastro-intestinal Diseases of Infants.—D. H. Bergey "says that the continued high death rate from gastro-intestinal diseases among infants under one year of age should cause us to put forth our best efforts to combat this scourge. All known preventive measures should be employed, such as sanitary inspection and control of the production and sale of milk intended for infant-feeding; the pasteurization of all milk used for infant-feeding by heating to 75° C. for ten minutes, and then rapidly cooling it and preserving it in the ice chest until used; the rigid exclusion of all adulterants of whatever nature; gratuitous supply of pasteurized milk, and ice, to the poor of our large cities; the careful instruction of the laity in the process of rational infant-feeding, especially of the great danger of feeding infants under 18 months to 2 years of age on anything but properly prepared milk without the consent and direction of the family physician; the inculcation of the idea that the gastro-intestinal diseases of infants are frequently communicable to other infants brought in contact with such cases. Some of these provisions are beyond the province of the individual physician and involve the police powers of the State and municipal health authorities, and without their aid and co-operation the individual physician cannot always be certain that all such preventive measures are being enforced.

Treatment of Pott's Disease after Development of the Deformity—Edward H. Bradford "says that the treatment presents itself in two aspects: (1) treatment of the disease itself, for the arrest and cure of a pathological process, and (2) the treatment of the deformity, that is, its correction, or the prevention of its increase. As to the first, it is agreed that the spinal column should be fixed in such a position as to diminish or abolish intervertebral pressure at the point of disease until complete cicatrization has been established; this fixation should be in a recumbent position in the acutest stage, and there should be thorough fixation and ambulatory treatment in the subacute and convalescent stage, that is, as soon as the slight jar unavoidable with locomotion is permissible without ill effect.

Correction of the Deformity.—This is admissible only in the first stage, when the process is active and the curve flexible, permitting rectification. The correcting force to be preferred is that of pressure rather than traction, as the former is more precise in its effect upon the diseased tissue than a pulling force which is partially expended upon the secondary curves. That method is to be regarded as the best by which the force applied can be more easily controlled by the surgeon, and which can be employed with the least discomfort to the patient. That also is to be preferred in which the retaining jacket can be applied to a spine held in a corrected position with the least discomfort to the patient and the greatest facility to the surgeon. If no force is needed on the secondary

curves or upon the neck, an anesthetic is often not needed to enable the surgeon to use as much correcting force as is desirable. After correction it is necessary to retain the spine in the right position until the gap made in correction is repaired or supported by ankylosis. A retention appliance will have to be worn for a long period. Irremovable plaster jackets form the most feasible means of immediate fixation. *To arrest development of the curve*, treatment by fixation of the trunk with proper appliances is often efficacious. Purely mechanical treatment, applied thoroughly and with great care for a long period, may produce excellent results. The rectification of the curve in Pott's disease is to be considered in every case of active disease with a deformity. In conclusion: The employment of force should depend on the pathological conditions, and not on the extent of the curve. Force should be used with great reserve. Improvement of the curve is to be considered in every case, and is to be attempted wherever the spinal column can be made straighter without great force. The main dependence, however, for an ultimate success remains in the surgeon's careful, continued, and thorough employment of retention appliances which hold the spine in the straightest possible position for a sufficient length of time for consolidation of the diseased bony structures. Success is to be won more by careful attention to detail than by an operation.

Uremic Cephalalgia in Childhood.—Henri Caussade "says that headache is a common symptom in many febrile and non-febrile diseases of childhood. There is also a cephalalgia distinct from migraine and yet resembling it. Paroxysmal attacks, sometimes as rapid as lightning and sometimes more lasting, appear in a child who is in apparently perfect health. Nausea and vomiting and ocular disturbances are lacking. Two etiological factors are concerned in the production of these headaches: An arthritic heredity and defective diet. As Comby puts it: "If the child has begun to eat over-nitrogenous food too early, if his digestive powers have been over-taxed, if he has not been able to assimilate or to sufficiently eliminate the ingested food, he may suffer from periodic headaches, cyclical vomiting, convulsions, albuminuria, urinary disorders, and other manifestations of the uric acid dyscrasia." Other authorities who have studied the question have come to the same conclusion. The difference in opinion applies to questions of a secondary nature, as the nature of the products retained in the organism. Uremia seems to all to be a true intoxication; it is to childhood what gout and gravel are to the adult. The diagnostic points are arthritism in the family history and pararthritic symptoms in the child (pruriginous dermatoses in especial). Treatment should be directed to the prevention of the formation of uric acid and to its elimination.

Venous Thrombosis in the Spinal Cord.—Maria Werewkina 'describes in detail the clinical history and autopsy findings of a girl, 12 years and 10 months old, who died of hemorrhagic myelitis and hemorrhage into the fourth ventricle. Microscopic studies of the spinal cord were made in all re-

gions, serial sections being used. It was found that the possibility for the spread of the disease process within the spinal cord is widespread, the following paths being demonstrated: 1. Running in a horizontal or somewhat oblique direction from a right posterior nerve root vein through a posterior right communicating vein to the central vein in the depth of the anterior pia process, thence to the veins of both anterior horns and those of the left posterior nerve root; probably also those of the left anterior root. 2. The second path runs almost horizontally from a vein of the right posterior column to a vein in the posterior median septum, and through this to the posterior commissure, where it enters the veins of the left posterior horn. 3. The third path runs vertically in the depth of the anterior pia process. 4. Finally, there are irregular anastomoses between the veins of the posterior median septum from below upward. At certain points in the vertical paths the disease process can communicate itself to either one of the horizontal paths mentioned (1 and 2).

Vulvo-vaginitis, Treatment of, in Little Girls.—Siebert²² used 0.5 to 1 per cent solutions of protargol in treating cases of gonorrheal vulvo-vaginitis in children, and observed that the gonococci rapidly disappeared and the secretion quickly ceased, just as experience with the remedy in adult cases of gonorrhea would lead one to expect. The treatment was administered three times a day, the solution being slowly injected into the vagina through an ordinary gonorrhea syringe, and the vulva held closed for ten minutes, if possible. This is repeated three times, so that the protargol solution is in contact with the vagina for half an hour three times daily. The secretion ceased in from three to eight days, but the gonococci were sometimes still found in secretion wiped from the vagina. An astringent solution was then used twice a day and the protargol once. When the cocci had completely disappeared the protargol was suspended. Cure usually resulted within four weeks. No complications occurred. If the protargol was stopped too early or not used with sufficient care, the secretion returned in a few days. The danger is that the patient may be discharged too soon; but this can be overcome, and the rapid disappearance of gonococci from the vaginal discharge lessens the danger of contagion for patient and surroundings.

Whooping Cough.—J. W. Wiltse²³ says that the essentials of proper management are: First, the early diagnosis of the condition and prompt isolation of the patient. Second, a rigid quarantine should be established and maintained until all danger of communicating it to others has passed. Third, parents should be taught that whooping cough is only a little less dangerous than diphtheria, scarlet fever, and measles. As to treatment, good ventilation and sunlight, gentle exercise out of doors in pleasant weather, a daily sponge bath, nourishing and easily digestible diet constitute the hygiene, while the drugs used can be narrowed down to germicides, antispasmodics, and tonics. Roskam's modification of Moncorvo's method would seem to be a very rational procedure,

and, according to his statistics, has succeeded very well. It consists of the application to the glottis of a one-third per cent solution of resorcin every four hours during the day, and, when possible, once or twice during the night. In a series of 290 cases treated in this way all recovered. The treatment was usually begun during the catarrhal stage, though in some cases the convulsive stage had begun. Of the series 2 cases recovered in fourteen days, 70 cases were cured before the end of twenty-five days, and 18 recovered within a month from the beginning of treatment. This last statement seems to be the most important part of the report, as it is admitted by all writers that whooping cough is most fatal in the very young. This method differs from Moncorvo's only in the omission of application of a 10 per cent solution of cocaine to the throat before using the resorcin, Roskam having found that cocaine frequently caused spasm of the glottis. Other objections might also be found to the application of so strong a solution of cocaine to the throats of these young patients. In the treatment of whooping cough biniodide of mercury in small and repeated doses, belladonna, guaiacol, tussol. and cochineal have been used. Dr. Taylor, of McKeesport, Pa., advocates and has practised vaccination in a series of 11 cases of whooping cough. Two of the cases passed from under observation; the other 9 were relieved in at least two weeks. He claims that as soon as inoculation from the vaccine was thoroughly established the characteristic paroxysm was checked, and only a slight bronchial irritation remained, which soon wore away. The author says that this procedure has not been adopted by the profession, and that inasmuch as we see mixed infections running side by side in the same patient, the one in no way ameliorating the other, but only serving to make the patient's chances for recovery smaller, one fails to see the *rationale* of the method.

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ERRATUM.

On page 123 in the January number, line 40 should read: "DR. GEORGE J. ENGELMANN, of Boston, read a paper on WHAT IS NORMAL MENSTRUATION."

His paper on "THE AMERICAN GIRL OF TO-DAY" was read before the American Gynecological Society.

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ORIGINAL COMMUNICATIONS.

THE PREFERABLE TECHNIQUE OF CLOSING THE INCISION IN ABDOMINAL SECTION AND HERNIOTOMY.¹

BY

J. WESLEY BOVÉE, M.D.,
Washington, D. C.

THE method of closing an incision through the abdominal wall is of small importance compared with the other surgical work for which the incision is the preliminary step. A casual observer or a careless surgeon would, therefore, be likely to consider a study of it as time squandered. To the careful surgeon doing much abdominal and hernia work it seems of great importance. We need no better evidence of this than to mention that a number of hours were devoted to this subject during the International Congress of Gynecology last year by the ablest men of the age, and again in the last meeting of the American Surgical Association in this city in May, 1900.

I believe this Society has not given the subject any particular attention, and knowing some of its members have well

¹Read at meeting of Medical Society of District of Columbia, January 23, 1901.

studied it is the reason for its presentation here to-night. One who has seen patients kept in bed for many weeks because of suppuration of an abdominal-incision wound, or required to undergo a subsequent herniotomy on this account or from defective closure at a preceding operation, will readily appreciate any practical method of preventing such results.

The primary objects to be attained in closing abdominal-wall incisions, whether in herniotomy or in the median line or elsewhere, are perfect union and rapid healing. Secondly rapid closure and freedom from annoyance to the patient are desirable. Absence of humiliation to the surgeon is not unwelcome. To secure perfect union in herniotomy is absolutely essential to success. In intraperitoneal operations it is exceedingly desirable, though relief from the condition calling for the operation usually overshadows it.

Perfect union is not the complete healing of the approximated surfaces, but their complete union in such a manner that subsequent hernia is very improbable. Hernia may occur in various parts of the abdominal wall without any previous operation, and the surgeon is not to be held responsible for every hernia in the line of a former operation. Nevertheless a large hernia in the line of a scar from a former operation is usually a discredit to surgery, and certainly always so considered by the laity. The patient that has a few years previously had a very formidable operation successfully done is ready to condemn the surgeon should a hernia develop as a result of it.

What are the conditions relative to the operation that lead to subsequent hernia? They are: early suppuration of the wound, faulty adjustment of the apposed surfaces, and burial in the wound of permanent suture material. Other remote conditions, such as undue exertion or the usual causes of hernia, are no less active in these cases, but for convenience I purpose to discuss only those mentioned. No doubt suppuration of the wound in the first few weeks after operation is the most frequent cause of hernia. It results in the formation of cicatricial tissue that is proverbially very yielding, and hernia always occurs first in such scars at the points that have suppurated.

In faulty approximation, union may be by first intention and no suppuration ensue, but the thickness of the line of union perpendicular to the skin is less than that of the structures adjacent. This leaves a trough-shaped depression in its inner surface and encourages a wedge-like pressure from intestine or omentum. As the line of resistance is lessened, yielding is

avored. The exact approximation of like structures is not a necessary element of perfect union in this field. Nevertheless it is quite necessary for the outer sheath of the muscles to be well brought together. The subcutaneous fat should be carefully and gently approximated, not for support, but for prompt healing. The burial of permanent suture material is apparently unwise, as sutures of this kind so commonly attempt to reach the surface, even years after operation. This process of suppuration weakens the wall and encourages the formation of hernia.

I am confident permanent material thus employed as sutures is accountable for a large part of postoperative ventral and inguinal hernia.

Suture Materials.—The principal materials used for closing abdominal and hernial incisions are silver wire, silk, silkworm gut, iron wire, horsehair, catgut, and kangaroo tendon. Of all the non-absorbable suture material, silver wire is the least irritating to the tissues. Its advocates claim for it, and I believe correctly, a slight germicidal action. I have, however, in a few of my patients, been obliged to remove silver sutures from the tissues one to six years after operation. Quite a number of such patients have applied to me for the same assistance long after colleagues have done successful operations for them. I have been told by advocates of silver wire such results do not occur if the ends be well compressed. This statement I cannot refute, but most of the silver sutures I have removed long after operation were inserted by these same gentlemen. Iron wire is more inelastic than silver wire and therefore more liable to break during or subsequent to its insertion. It is more liable to unduly constrict tissues when placed too tightly. It has no antiseptic action whatever. These conditions, notwithstanding its comparative cheapness, have led to its being practically discarded as a suture material. Silkworm gut is the most commonly employed of all material for closure. It acts very badly as a buried suture. Horsehair is really non-absorbable. Its fineness and slight tensile strength, together with its great elasticity, have caused it to be employed for little else than skin-closing. Great difficulty has been encountered in trying to sterilize it. Silk, another non-absorbable material, is a favorite with a large number of surgeons. It is the most readily manipulated of all suture material, but easily infected, and, when buried, prolific of trouble to the patient, as it is restless in the tissues. Catgut,

absorbable, is very difficult of preparation for surgical use. To sterilize it and retain its tensile strength with a certainty of its remaining sufficiently long in the tissues is a test most commercial catgut cannot stand. No doubt this is a great drawback to its success, as its cost is materially increased by the large amount found to be defective. Buried in the tissues in a sterile condition, it is absorbed in a reasonable time and causes no trouble. Kangaroo tendon is unquestionably the best suture material. It is sufficiently elastic and is non-irritating to the tissues. Having a straight fibre, it is easily sterilized and handled. As prepared by Marcy it remains a number of weeks in the tissues.

Methods of Closure.—As many plans of solution of other difficult problems are usual, so many of closing the abdominal incision have been devised. The simplest of these is the interrupted, through-and-through suture. This has the advantage of rapidity, an element of great importance in many cases. Usually non-absorbable material is used. The disadvantages of it are injury, usually to the extent of sloughing, of the skin enclosed; shortening of the distance between the peritoneum and the external rectal sheath or fascia, causing less resistance to internal pressure; irritation of the peritoneum, which encourages omental or intestinal adhesions along the incision wound; and leaving a track along each suture for infection from the skin or without. This last objection I have succeeded in overcoming by passing the sutures just under the skin for an inch or more transversely to the cut edge, then downward toward the peritoneum as though it had pierced the skin, and bringing it out on the opposite side in the reverse order. These sutures, when correctly applied and tied in small knots, or twisted if wire, will approximate not only the deep structures but the skin as well; and if kangaroo tendon be used the ends may be cut short and buried completely. I have employed it a number of times with satisfaction. In very fat subjects it will cause undue constriction and perhaps necrosis of the subcutaneous fat, the same as will the ordinary through-and-through suture. This is a very unpleasant feature of the through-and-through suture and cannot be avoided, though the figure-of-eight plan in some cases seems to do so. Against the through-and-through suture has been urged the difficulty of approximation of like structures. This, however, is probably overdrawn, though a number of surgeons close the fascia with a continuous suture in addition. Noble, of Phila-

delphia, overlaps the cut edges of the fascia in closing. The next simplest method is closing all tissues beneath the subcutaneous fat with interrupted buried sutures, and then the fat and skin by another set of interrupted or continuous sutures. The peritoneum is often closed by a separate suture, continuous or interrupted.

Another method that enjoyed some popularity a few years since was closing the peritoneum with catgut, and then the muscle, fascia, and skin with three continuous sutures of wire or silkworm gut that passed through the skin some distance from either end of the wound and in direct line with it. While the sutures were in place this method endangered infection along them, which danger was especially increased by pulling them out. In addition there was danger of interrupting the union by the force necessary to their withdrawal. The buried animal suture, placed in tiers, is believed to have been first employed and recommended by H. O. Marcy, of Boston, who taught the method to me in 1895. It is probably the best one known at the present time, and is used with slight modifications by many surgeons. If much fat be present this plan usually requires a little more time than the through-and-through method, but not more than that method with the modifications mentioned. It requires from four to seven tiers, but has the great advantages of leaving a wide surface of approximation, of sealing the wound from skin infection, of leaving no sutures to be removed, and of leaving but a slight line to mark the place of the incision. In incisions of more than six inches it should be supplemented by a few interrupted sutures, including the fascia and muscles. One finds, also, if drainage through the wound be required, the same method is as good and perhaps superior to any other, as the wound can be practically sealed off from the drainage track. It is very necessary to use material that will remain secure for a number of days, to prevent early hernia or even reopening of the wound, as has occurred to me. The best material for this method is kangaroo tendon, and that imported by Marcy has given me the greatest satisfaction. Careful approximation of the layers is sometimes very important, and is easily secured by occasionally picking up, in the suture, tissue included in the next lower layer. A good deal has been said of dead spaces being left by this method. The same surgeons leave them between the through-and-through sutures, though transverse to the planes of the tissues. In my service in Columbia Hos-

pital great care has been exercised and frequent bacteriological investigation made to discover weaknesses in the technique instituted in the surgical work. The plan followed is about as follows:

The operating room is disinfected with formaldehyde gas about once each month. The day previous to operation it is thoroughly aired, cleaned, and floors washed. If the last case operated was one in which pus or other fluid suspicious of being infected was present, the pans, trays, and tables are carefully scrubbed with sand, soap and water, and then with 1:100 lysol solution. The pans and trays are left in some germicidal solution for hours, and the instruments cleaned and boiled from three to ten minutes. If the previous case has been a clean one this sterilization process is dispensed with after the operation or on the day preceding. On the morning of the operation the table, basins, trays, electric lights, small stands, and stools are washed with a 1:1000 bichloride of mercury or 1:100 lysol solution, and the instruments boiled from five to ten minutes. The temperature of the room ranges from 75° to 85° during the operation. Each kind of gauze and cotton is wrapped separately in a towel or kept in a glass jar and sterilized thirty minutes, under 15 pounds pressure, in a Kny-Scherer sterilizer the morning of the operation. It is only opened as needed during the operation. Towels, table covers, and other similar supplies are sterilized in the same manner. The only medicated gauze used is dry bichloride gauze, which is prepared by being cut in suitable sizes, allowed to remain in bichloride solution (1:1000) a few days, wrung out, wrapped in oil paper, and put in an air-tight jar. Sufficient for the dressing is removed and dried in the sterilizer just before the operation. Between operations the same morning the instruments are boiled five to ten minutes and the pans and trays cleansed with the bichloride or lysol solution. All water used is filtered and boiled at least thirty minutes under pressure, and drawn as needed.

The catgut used is bought unprepared in lengths of ten feet. The strength of each piece is tested, and it is prepared as follows:

Each piece is wound loosely on a glass rod and put in water from ten to twelve hours, then in 2 per cent formaldehyde solution for twelve to twenty-four hours, and this washed out in running water for ten or twelve hours. Afterward it is dehydrated by immersing it twelve to twenty-four hours in 95 per cent alcohol. Each strand is again tested as to its

tensile strength and defects. The good pieces are wound on a glass spool, put in a glass jar, covered with absolute alcohol, and an air-tight top screwed on. Four of these jars are placed in a brass cylinder, which is now filled with 95 per cent alcohol and boiled twenty-five to thirty minutes in an Arnold sterilizer for two successive days. The glass jars are taken from the cylinder, sealed with paraffin, and kept for use. During the operation catgut is kept in the same alcohol.

Marcy soaks the tendon for some time with 1:1000 solution of mercuric chloride, and then, strand by strand, the tendons are separated and placed straight on wet mercuric towels and dried. Then they are kept twenty-four hours in a 2 per cent solution of formaldehyde and washed in sterile water. Then they are placed in 1:4000 chromic acid in a saturated solution of carboic acid, and sun-dried in mercuric towels. Then they are put in 1:15 carboic oil (linseed). They are kept for months before being used.

The operator, principal assistant, and instrument handler scrub hands and forearms for at least five minutes, wear sterilized suits, caps, and gowns over the suits. The hands are well washed in antiseptic solution, usually bichloride 1:1000. Each wears rubber gloves that have been boiled and submerged in a 1 per cent solution of tricresol for a number of minutes. When ready to be put on they are removed from the tricresol and washed in the bichloride solution. The hands are now dried and anointed with a sterilized glycerite of starch, which greatly facilitates putting on the gloves. The sleeves of the gowns overlap the wrists of the gloves. The nurses handling gauze and dressings wear sterilized suits and caps and cotton gloves.

The preparation of the abdomen of the patient is as follows: On the day previous to operation a wide area about the site of the proposed incision is shaved and gently scrubbed, and a green-soap poultice applied for three hours. All traces of the soap are removed, and a compress of gauze soaked in bichloride solution, 1:2000, is applied and remains until next morning, when it is renewed. This application remains on until the patient is placed on the operating table. The abdomen is now scrubbed with green soap, sterile water, and a stiff brush. It is then rinsed with sterile water and again scrubbed with alcohol. After this, bichloride solution (1:1000) is poured slowly over the cleansed surface. In this preparation the assistant wears large rubber mittens over his gloves, which are then discarded and the sterile gown donned. The incision

through the skin is slowly made in a straight line and directly vertical to the surface. The edges are wiped off with gauze and the dissection continues. All bleeding is checked by gauze and pressure. Should any points resist this method a small, pointed forceps is placed on the bleeding vessel alone and left for some minutes. It has never been found necessary to ligate, except some very large vessel is encountered. If the incision be for herniotomy the danger of infection is much lessened. If for the removal of pus or other infectious material, some danger to the cut surfaces from this cause is obvious. But against this every precaution is taken.

My plan of closure, when not obliged to resort to one less careful and requiring less time, is as follows: When the wound is less than six inches in length, the peritoneum is first closed with a fine, running, over-and-over suture, beginning at the upper end of the incision and following down on one side and up on the other. This suture tied brings the cut edges of the peritoneum to a small point and lessens the surface within exposed to adhesions. Another small suture now picks up the deep or subperitoneal fascia, the two edges being whipped together. If the incision is in the median line, *linea semilunaris*, or between and parallel to them, a tier of suture in the muscle will be rarely necessary. Instead, the thick fascia receives the next layer, which will occasionally include the muscle and even the deep fascia. This layer should be of a strong, coarse material. If the wound is more than six inches in length, the peritoneum is closed with a running suture, as well as the deep fascia, and, in addition to the continuous, *en masse* sutures are placed along the incision one to two inches apart and including fascia and muscle. If the operation be for inguinal hernia, the muscle as well as the fascial layer is sutured carefully to Poupart's ligament. After these sutures are placed it is necessary to carefully suture together the cut surfaces of subcutaneous fat and the superficial fascia. For the fat a fine suture loosely applied is sufficient. For the fascia the suture should be of moderate size. Sometimes the fat will require two or three tiers of suture for correct apposition. The skin is closed by a fine suture placed in what might be called a half of Marcy's parallel or cobbler's suture. The last end of it is tied or so fastened that it may be left under the skin in such manner that no suture material or wounded surface shows. The skin, for about three inches in every direction from the incision, is rubbed gently with wet bichloride gauze, and a piece of dry bichloride gauze of about five thick-

nesses, and extending about one inch in every direction, is laid over the wound. A sterile towel dries the surrounding surface. And now is applied sterilized gauze, four thicknesses, soaked in flexible collodion. This layer of gauze is large enough to cover nearly the whole abdomen. Over it is placed the same size piece of dry sterile gauze. This gauze is carefully smoothed out and pressed against the skin. In a few minutes it is hardened and seems sufficient for incisions of even one foot in length. This dressing is not disturbed until from the twelfth to the fifteenth day, when it either loosens or is pulled off. There is found at this time but a fine line showing the site of the incision, and no raw surface is to be seen. Occasionally a slight serous oozing will occur later, requiring a wet bichloride gauze covering a day or so.

In large ventral hernia extra suturing as well as extra dissecting will be needed. The recti muscles should be carefully approximated and firmly sutured with interrupted as well as continuous sutures. Especial care is needed in these cases to close the deep fascia. In fact, the width of approximated surfaces in the median line should be made greater than normal; and as these patients are usually possessed of much adipose tissue, a restricted diet is strongly indicated.

In herniotomy and long incisions the patients are kept in bed three weeks, but usually fifteen days is the amount of time. A well-fitting bandage is applied in every case and worn for about six months.

The advantages of this plan are, first, no injured tissue is left in the wound to slough; second, the danger of adhesions to the under side of the incision is reduced to a minimum; third, the approximated surfaces are the widest possible; fourth, the union is rapid and firm; fifth, no sutures are to be removed; sixth, the dressing is very cheap and comfortable and needs no changing; seventh, the exposure to infection after the operation is reduced to almost nothing; and, eighth, proper support to the abdominal wall is afforded by the bandage.

Another point that might be mentioned in its favor is the good appearance of the resulting scar. An ugly scar, even in this portion of the body, is very distasteful to the wearer.

This technique was finally perfected in my service in Columbia Hospital in May last, and during my six months' work since then I find there has not been a drop of pus formed after operation. During that time forty-five times has the abdominal incision been closed by Dr. White and myself by this plan

Forty of these patients recovered. Among these were radical hernia operations, both ventral and inguinal, radical operation for cancer of the uterus, and 24 pelvic pus cases. With a less perfect technique I have followed this plan for five years. I have seen but one hernia result during that time. That woman amused her ward companions by kicking at an electric light suspended over her bed during the two weeks following operation. The hernia was discovered two weeks after her leaving the hospital and was promptly closed. Others may have occurred without my knowledge. Certainly my results with the *en masse* suture were not so good. Whether patients subjected to severe intraperitoneal operations should be allowed out of bed in two weeks is a question still in dispute. Yet the additional week that is customary is usually only a greater precaution against ventral hernia. If two weeks is sufficient for ordinary cases, then nothing justifies the additional time save depressed vitality of the patient. Aside from this feature, two weeks in bed seems abundant in short incisions. Ries, of Chicago, allows many such cases to sit out of bed in two days and to return home in five or six. His plan of closure is practically the same as mine. I have seen some of his patients months later, and failed to find any weakness in the scar. Thus far absolute sterilization of the skin has not been accomplished. Until that has become possible the liability to infection of all skin wounds must not be forgotten. A very careful technique will, however, minimize this danger. If the deeper tissues can be protected against this infection it should be done. It seems only rational that sutures passing through the skin enhance liability to infection and should therefore be avoided when possible.

1404 H STREET.

THE USE OF THE SPRAY IN THE LOCAL TREATMENT OF GYNECOLOGICAL DISEASES.

BY

JAMES C. WOOD, A M., M D.,

Professor of Gynecology in the Cleveland Homeopathic Medical College; Fellow of the British Gynecological Society; Founder Member of the International Congress of Gynecology and Obstetrics, etc.

THERE is a pretty general consensus of opinion that the usual local treatment of the catarrhal and inflammatory diseases of the female genital tract is unsatisfactory and unscien-

tific. The continuous use of the vaginal douche, supplemented by medicated tampons of suitable material, will many times afford marked relief, and, if persisted in long enough, will accomplish a cure where the disease is not too deep-seated. However, the time required in the average case to bring about a cure by these methods is exasperatingly long, and there are few women who possess sufficient patience to persevere until all discharge ceases and the mucous membranes assume a normal condition.

I desire to state it as my belief, before proceeding to describe what I believe to be a better way, that much of the routine local treatment of gynecological diseases, by whatever method, is both useless and harmful. In the larger per cent of the catarrhal affections causes exist which, unless removed, will perpetuate the leucorrhea until the day of judgment. Such causes are uterine displacements, periuterine and appendicular diseases, cervical lacerations with ectropium, relaxations of the pelvic floor, inveterate constipation with disordered circulation, malnutrition, etc. It is, too, impossible to overcome the discharge so long as certain exciting causes remain operative; of these the various expedients used to prevent conception are especially to be mentioned. When any or all of the lesions enumerated are present the case is surgical and not medical, providing, of course, the interests of the patient are of first importance rather than those of the attending physician. Office treatments in these cases, like the babbling brook, go on and on forever, the intervals being succeeded almost invariably by relapses. As time progresses these patients become discouraged, not infrequently hysterical, and almost always extremely introspective. The indications are, when any of the causes enumerated exist, to remove them. Divulsion, curetting, trachelorrhaphy, reparation of the pelvic floor, the removal of rectal lesions, and, if necessary, the correction of an existing uterine displacement, will make further local treatment unnecessary.

Over and above the class of cases complicated by one or more of the foregoing lesions there are large numbers of women suffering from "leucorrhea" (an indefinite term suggesting various causes) who seek relief. Whether specific or non-specific, they expect relief without surgical interference. If specific, proper and timely treatment will prevent the disease extending through the uterus into the pelvis; if non-specific, after constitutional dyscrasias have been overcome, proper local treatment will cure the discharge.

With many other physicians I have long been dissatisfied with the "swabbing and tamponing" process now in vogue. I think it was Dr. Skene who first suggested the use of the hand spray in gonorrheal vaginitis, and, acting upon his suggestion, I recommended this treatment in the first edition of my text book, published in 1894. When, in June of this year, I removed my office to the building at present occupied by me, I found each office supplied with compressed-air pipes of thirty pounds pressure. I therefore determined to experiment in a systematic way with the spray in the local treatment of the diseases of women. While it is yet too early to write dogmatically or to formulate specific indications, I desire to call the attention of the profession to the great superiority of this method of treatment to that so long practised, hoping thereby to interest others in the subject.

Given a case of "leucorrhea," I proceed as follows. If gonorrhea is suspected the discharge is examined for the specific bacillus. Whether the case is one of specific or of simple origin, the parts are first thoroughly sprayed through a fenestrated speculum with a fifty per cent solution of peroxide of hydrogen, which, after the excess of fluid is wiped away, will leave them perfectly clean and blanched. This is followed by the use of an antiseptic. I have found, for the antiseptic, the appended formula extremely useful. Each tablespoonful contains the following:

Boric acid.....	gr. iv.
Thymol.....	gr. $\frac{1}{16}$.
Sodæ boras.....	gr. i.
Sodæ bicarbonas.....	gr. $\frac{1}{4}$
Ol. pumilo pine.....	℥. $\frac{1}{4}$.
Eucalyptol.....	℥. $\frac{1}{16}$.
Ol. gaultheriæ.....	℥. $\frac{1}{16}$.
Oil peppermint.....	℥. $\frac{1}{16}$.
Alcohol and glycerin.....	q s.

The bichloride of mercury, even in the weaker solutions, is too irritating when used in this way, and is not as effectual as are solutions containing eucalyptus, thymol, boric acid, etc. Should there be hanging from the cervix a tenacious, white-of-egg discharge, which is so hard to dislodge by ordinary methods, an alkaline spray, such as is used by the nose and throat men (Dobell's solution is one of the best), will quickly dissolve it and clear the cervix in a most thorough manner.

Thus far the treatment is routine. If now the catarrh is specific, it is followed by a spray composed of a five per cent solution of protargol, care being taken to apply the spray over the entire vaginal and cervical mucous membrane, as well as to let it play upon the external os. With the pressure at my command the spray will penetrate, unless the os is very small, the entire cervical tract. In order to reach all of the vaginal mucous membrane a fenestrated speculum is at least a great convenience. It should be withdrawn and reintroduced in a slightly different position, so that no part of the vaginal mucosa will escape the spray. The same end can be accomplished by means of a bivalve rectal speculum controlled by an assistant. Should the urethra be implicated, both the cleansing and the medicated sprays are forced into the meatus, pressure being made with the finger upon the bladder end of the canal, in order to prevent vesical infection. If Skene's glands are involved these are treated in like manner. The vaginal walls are now kept apart by a good-sized lamb's-wool tampon medicated with a ten per cent glycerin solution of ichthyol. The patient is instructed to remove the tampon and take a 1 : 2000 bichloride douche before again presenting herself for treatment. The treatments are made from two to seven times a week, according to the acuity and intensity of symptoms, and are persisted in until all discharge ceases and all gonococci disappear, which will require from one to four weeks. Should the disease have invaded the uterine cavity, curettage is, of course, often called for. Cases are occasionally met with in which, at the onset, the symptoms are too intense to justify any local treatment other than the douche, sitz bath, etc. I have entirely discarded, since using the spray, the so-called "dry treatment" of vaginitis.

In the non-specific catarrhal affections greater latitude, after the parts have been prepared by the peroxide and antiseptic sprays, should be indulged in in the selection of the local medicament. If the discharge is purulent and the cervix abraded, there is nothing better than calendula officinalis, forced into the tissues in the form of a fifty per cent glycerin solution, and followed by a tampon saturated in the same preparation. If the leucorrhea is profuse, stringy, and tenacious, and especially if the glands of the cervix are involved, the aqueous extract of *hydrastis canadensis* should be substituted for the calendula, prepared and applied in exactly the same way, the distended cervical glands being first punctured.

If the periuterine tenderness is marked and there are inflammatory deposits with hyperplasia, ichthyol has proved most serviceable in my hands. This may be advantageously supplemented by a lamb's-wool tampon medicated in the following solution:

Ichthyol.....	3 iss.
Tincture of iodine.....	3 i.
Liq. hydrastis (glycerite).....	3 iv.
Acid, carbolic.....	gtt. x.
Boroglycerite (25 per cent) .. .	ad 3 iv.

My object is not so much to give the medicaments used by me as to call attention to the method of applying them. The treatment of each individual case will, of course, vary according to the indications, and each physician can select his favorite remedies and apply them with infinitely more satisfaction than is possible without the spray. I am curing these unnatural discharges in less than half the time required under the older régime. When one takes into consideration the glandular structure of the tissues involved, and realizes the force by which the spray under a pressure of thirty pounds is delivered, it is not difficult to understand why this is so. My only wonder is that the spray has not been generally utilized for this purpose, especially in view of the fact that the nose and throat men have for years found it so useful in the treatment of the catarrhal affections of the respiratory tract. The ordinary hand spray is of but little value because of its limited air pressure. Air tanks, such as the nose and throat men use, can now be had at comparatively small expense and will answer every purpose. I have a series of the Davidson atomizers and find them very satisfactory for gynecological work. For solutions used but rarely it is well to have a small metal atomizer, so that a small amount of the medicament can be quickly brought into action when required. Cocaine can be most effectually applied to the mucous surfaces by this method.

I also use the spray in the treatment of rectal and sigmoidal diseases, applying it through the Kelly proctoscope with the patient in the knee-chest posture. One can, by means of reflected light, get a perfectly clear view of the mucosa of the sigmoid and descending colon, and in chronic sigmoiditis the greatest possible benefit will often follow local spraying of the gut.

ROSE BUILDING, CLEVELAND.

INTERSTITIAL PREGNANCY.¹

BY

LOUIS J. LADINSKI, A.B., M.D.,

Adjunct Professor of Gynecology, New York Polyclinic School and Hospital; Visiting Surgeon to Gouverneur and Beth Israel Hospitals.

(With Illustration.)

IN interstitial pregnancy the impregnated ovum develops in the portion of the tube which lies within the uterine wall, and is the rarest variety of ectopic gestation. Martin² reports 1 case in 77 of extrauterine pregnancy; Kelly, in his book,³ states that he has never observed a case; Lawson Tait⁴ cites 1 case in 100 cases of extrauterine pregnancy. In 1,324 cases of uterine pregnancy recorded collectively by Immigrotsky,⁵ by Schrenk,⁶ and by Rosenthal,⁷ 40 cases were said to have been interstitial. In 31 cases of ectopic gestation operated on by myself, the twenty-eighth in the series proved to be interstitial and forms the subject of this report.

Statistics obtained from more recent records show a still smaller percentage of cases. This is largely due to the fact that the older statistics include as specimens of interstitial pregnancy cases of cornual and tubo-ligamentary pregnancies, for which conditions interstitial pregnancy is very often mistaken. The differential diagnosis between interstitial pregnancy and pregnancy of the rudimentary horn is exceedingly difficult. The chief point of difference is that in the interstitial pregnancy the sac communicates by an orifice with the uterine cavity or is separated from the uterus by a septum, while in pregnancy of the rudimentary horn the two halves of the uterus are separated above while they are united below at

¹ Read before the Section on Obstetrics and Gynecology, New York Academy of Medicine, at a meeting held December 27, 1900.

² "Diseases of the Fallopian Tubes," 1895.

³ "Operative Gynecology," vol. ii., p. 434.

⁴ "Lectures on Ectopic Gestation," 1890.

⁵ Inaug. Diss., 1886.

⁶ Inaug. Diss. Dorpat, 1893.

⁷ Centralblatt für Gynäkologie, No. 51, 1896.

the cervical portion. Another point of distinction is that in interstitial pregnancy the round ligament lies to the inner side of the sac, whereas in pregnancy of the rudimentary horn the round ligament is found to the outer side of the sac. The clinical diagnosis of interstitial pregnancy is considered by no less an authority than Dr. J. W. Taylor¹ as impossible.

Interstitial pregnancy differs in its course and termination from tubal pregnancy. In the latter variety primary rupture usually takes place between the second and third months, while in interstitial pregnancy the rupture generally occurs from the second to the fourth month, and may be delayed much later, occasionally until the ninth month. Interstitial pregnancy may terminate either by rupture into the uterine cavity and end as an intrauterine pregnancy; or the gravid sac may rupture through the upper portion of the tube, encroach on the uterine wall, and develop as a tubo-uterine variety; or the rupture may take place into the peritoneal cavity. Because of the thicker wall and the greater vascularity of the sac, intraperitoneal rupture is usually more rapidly fatal in this variety than in the ordinary tubal pregnancy. In 20 cases of primary rupture in interstitial pregnancy enumerated by Rosenthal,² all proved fatal, and Dr. J. W. Taylor,³ in his admirable and exhaustive review of extrauterine pregnancy, states that rupture of interstitial pregnancy is invariably followed by a fatal result.

The history of my case is as follows: Mrs. R. N., age 38, married twelve years, has had three children, the last three years ago, and one miscarriage two years ago. She began to menstruate at the age of 13, the periods occurring every two months and lasting but one day, before her marriage. Since her marriage her menstruation was more regular, occurring every month and lasting from three to four days.

For about three weeks prior to her admission to the hospital she has had irregular bleeding and two severe hemorrhages after having amenorrhea for seven weeks. Three weeks ago she was suddenly taken with severe abdominal pains, which lasted for about eight hours and subsided under treatment, and the patient felt well until two days ago, when she was seized with abdominal cramps, vomiting, dizziness, and fainting spells. She was taken to Gouverneur Hospital,

¹ British Medical Review, 1898.

² Centralblatt für Gynäkologie, No. 51, 1896.

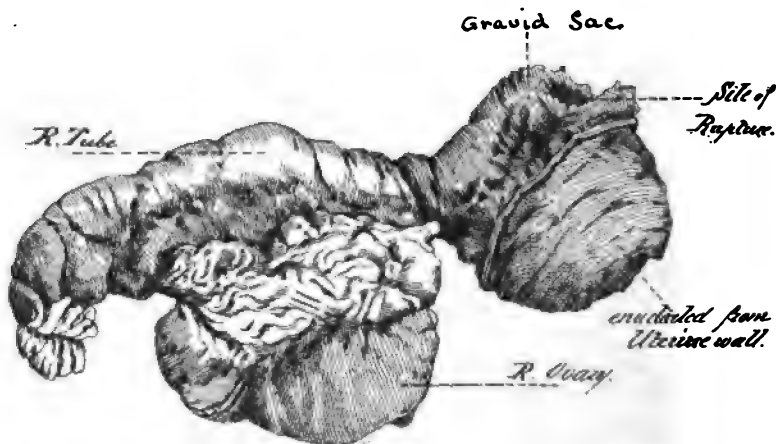
³ British Medical Review, 1898.

but was immediately discharged at her own request. I saw the patient for the first time on the evening of that day, October 4, 1900, at her home, and had her at once transferred to my service at the Beth Israel Hospital.

Her condition on admission was as follows: Temperature 101.6°, pulse 108 and weak, respirations 24; tongue coated; she complained of severe colicky pains in the abdomen, especially on the right side; the abdomen was distended and markedly tender, tympanitic on percussion over the upper part and slightly dull over the lower half, apparently due to fluid in the peritoneal cavity. On vaginal examination the uterus was found in the normal position, somewhat enlarged, but normal in consistency; a fluctuating mass, the size of a hen's egg, was felt in the right cul-de-sac, which was so intimately adherent to the right side of the uterus as to appear to be part of it. There was a bloody discharge from the uterine cavity.

A presumptive diagnosis of ruptured tubal pregnancy was made, but the tumor was so different in character from the gravid tubal sac I have been accustomed to feel, that, contrary to my habit of operating early in these cases, and as her condition justified it, I postponed the operation in order to observe the patient more closely. A few days later, on finding that the mass had increased somewhat in size and the other symptoms were becoming aggravated, I operated under ether anesthesia. The patient was first curetted; the uterus was found to be enlarged, the sound entering to a distance of about five inches, but nothing was found in the interior. She was then placed in the Trendelenburg position and a median incision was made. When the peritoneal cavity was opened a quantity of dark blood escaped. Numerous blood clots were removed and the peritoneal cavity sponged out. On exposing the uterus and the adnexa, the right Fallopian tube was found to be distended by a fluctuating mass to the extent of about two inches in diameter, the greatest amount of distension being at the uterine end of the tube, where the mass was embedded in the uterine wall and caused a perceptible bulging of the right cornu in all directions. There was a rupture in the posterior wall of the sac, from which the hemorrhage was so profuse that I was obliged to clamp the uterine cornu and the distal end of the tube before proceeding any further. The slight manipulations must have started the fresh bleeding by wiping away the clot which had closed the old rent. It was evidently a case of interstitial pregnancy,

and as the left adnexa were normal I decided, if possible, to excise the mass without removing the uterus, which I then proceeded to do in the following manner: The right ovarian artery was ligated and the upper border of the ligament was divided; then an interlocking ligature was passed through and around the right cornu and tightened. The sac wall close to the cornu of the uterus was cut throughout its entire circumference, and the enclosed mass, which was partly embedded in the uterine wall, was enucleated by blunt dissection; the branches of the uterine artery, which were unusually large, were clamped and tied. The stump in the uterine wall was touched with pure carbolic and washed with alcohol, and its edges drawn together by sewing the peritoneum with cat-



gut. The vermiform appendix was found adherent and was removed. The abdominal wound was closed with catgut, sewing each layer separately. The patient made an uneventful recovery.

Microscopical examination of the sac contents by Dr. F. Jeffries revealed chorionic villi.

The most interesting feature in this comparatively rare case is the fact that rupture of the sac took place on two occasions, the first occurring about three weeks and the second three days previous to operation, and that neither was followed by the usual fatal hemorrhage.

That the uterus was not removed, as is customary in these cases, is also worthy of note.

GLUE CASTS FOR TEACHING PRIMARY REPAIR OF
PERINEAL INJURIES.¹

BY

ROBERT L. DICKINSON, M.D.,

Assistant Professor of Obstetrics, Long Island College Hospital;
Surgeon to Brooklyn Hospital.

(With five illustrations.)

Need of Instruction on Life-size Models.—It is impossible to convey, to one who has never seen the operation, any clear idea of pelvic-floor injuries or their repair, in terms of two dimensions—that is, by photograph or diagram or the most highly finished drawing. The giant model of the vulva to be sewed in view of the whole class is looked at as a joke and involves a defective teaching method. I have tried it.

A student should make his mistakes on models, not on flesh and blood.

A teacher can demonstrate on models; he cannot on distorted and swollen structures over which blood pours. There are not enough torn perineums to go round before graduation. Afterward there are too many.

For four years I have taught with the casts of my own devising here exhibited. Every student sews up one of each variety. These are not copies of casts taken from actual torn perineums, but casts made after free-hand sketches in modelling clay.

Outfit Required.—First: Two or more hollow moulds, or “shells,” in which the glue is cast. For a class of twenty each week, two moulds of the complete and two of the incomplete injury are desirable; otherwise, in casting, it is a long process to wait for the glue to harden and the mould to be free to use again. For smaller classes one of each kind will suffice.

Second: The glue material. This may be made according to the formula of Dr. Cathcart, of Edinburgh, but a much more elastic material is needed. That from which the grotesque faces

¹ Presented at the meeting of the American Gynecological Society, May 1, 1900.

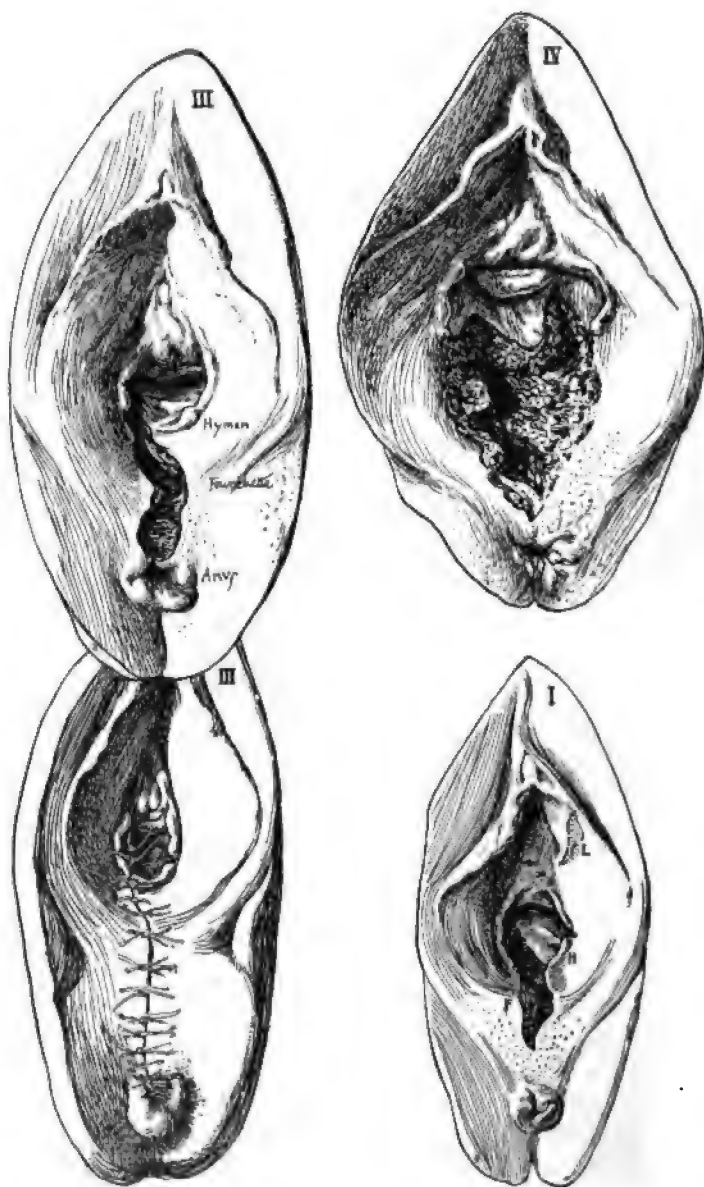


FIG. I.—Glue cast, from model of laceration of perineum after delivery; for suturing. The tear extends up the vagina between the lateral and posterior walls, down through the hymen, H, the fourchette, F, and half-way to the anus. The hymen has also been split above H, and at L is one of the skin-deep injuries on the labium minor. Accurate approximation, hymen to hymen, fourchette to fourchette, is demonstrated. The models are life-size; these cuts are half life-size.

FIG. V.

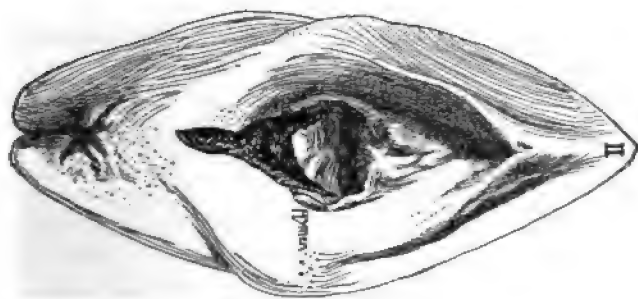
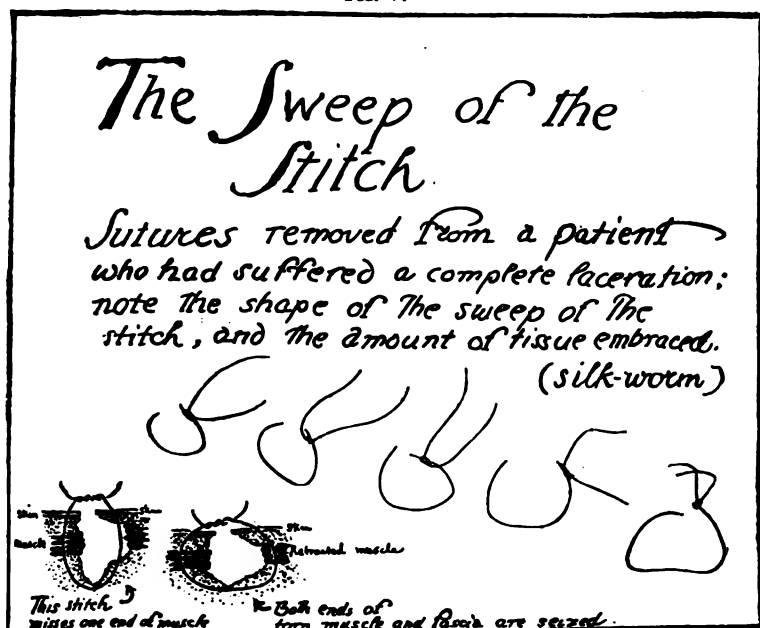


FIG. II.—Y-shaped perineal injury in glue cast, the forks running up the lateral vaginal sulci. All tears zigzag through muscular and fascial planes.

FIG. III.—Glue casts representing complete laceration of the perineal body before and after repair. The tear can be drawn wide open in order to place the stitches, then closed as they are tied. The lower cut shows a student's actual work, three sutures on the vaginal mucous membrane, three sutures on the anal mucous membrane, and the deep sutures between anus and hymen.

FIG. IV.—A deep and extensive Y-shaped tear in an edematous or contused pelvic floor, as it may occur after extensive operative interference in delivery. The sphincter is not injured. The swollen and elongated anterior lip of the cervix is seen hanging just below the vestibule.

FIG. V.—Reduced fac-simile of a card, 8 by 10 inches, on which the actual stitches are glued, in order to demonstrate the ample lateral grasp every deep stitch should have. On another card are samples of needles; on a third, suture materials, etc. All these are object lessons. A student must make personal contact with every detail of perineal repair.

sold on the street are made can be had for thirty cents a pound, and can be supplied by any plaster man. It should contain little or no glycerin and be of deep red color.

Third: Compound stearate of zinc to coat the models, in order that the laceration may show up better. This coloring is not essential, except in casts of old injuries used for teaching secondary repair operations, as denudation is thus beautifully demonstrated.

Fourth: For each student who is operating, one needle (usually Hagedorn), 4 centimetres from eye to tip, half of a circle whose radius will be about 22 millimetres; a smaller needle, 23 millimetres from eye to tip, its radius being about 10 to 13 centimetres; cotton or linen thread, beeswax to render it smooth, scissors and needle-holder and artery clamps. The clamps and the needle-holder are not absolutely necessary. One pair of scissors will do for several student-operators. Anatomical forceps may be added to the outfit.

In addition to these things, I find it of advantage to be provided with:

(1) A model showing the levator ani within the bony pelvis. No man has a clear conception of this muscle who has not seen such a preparation. Over the levator lies a layer that can be removed and which shows the group of muscle pairs that centre in the perineal raphé.

(2) A model of the pelvic fascia.

(3) A cast of the genitals of the virgin.

(4) A cast of the vulva of the parous woman.

(5) One of the woman immediately after delivery who has suffered no injury.

(6-9) Plaster casts representing the various degrees and kinds of injury.

(10-12) One keeps for exhibition some of the dried-up glue casts of tears which have been sutured, to show the results desired and the accurate and proper placing of stitches; also a set of the various suture materials for demonstration, and the different needles which may be used. Any instrument firm will supply these materials as an advertisement.

A Sample Schedule.—In beginning the clinic the structures of the pelvic floor are demonstrated; then blackboard sketches of a transverse section of the tear may be made to show the zigzag irregularity produced by retraction of torn muscle ends; then the proper and improper sweep of the stitch is drawn, and, last, diagrams to show how the tears run up the

vagina between the posterior and lateral walls and not in the median line. Charts may be used for this, but two dimensions teach little concerning perineal injuries, and these models are far better.

The materials are passed about to be handled and are talked over. The various needles are mounted on cards with explanatory labels. Various practical details may be demonstrated, such as the way of passing silkworm gut twice through the eye of a needle and double-arming the suture material, to avoid stitch-hole abscess from the skin bacillus, by fastening the completed suture to a card on which is a diagram showing the method of its use. On another card is a set of silkworm stitches which were removed from the living patient. These retain their shape and show the large lateral sweep of each stitch and the amount of tissue grasped.

I now set two students at work at an incomplete rupture cast, one to do the stitching, the other to assist and, more particularly, to make the wound gape. This gaping is best effected, not by pulling the edges apart, but by the assistant's finger tip pressed against the back of the mould opposite the bottom of the wound, throwing the bottom of the wound forward.

When the stitches are all in, the assistant squeezes the wound edges firmly together and the operator ties. If he puts on too much tension the material cuts through, but this of itself gives him a hint of how firmly to tie. The material is more delicate to manipulate without tearing than are the living tissues, but the student learns delicacy of touch in consequence thereof. He makes mistakes in not bringing the parts together, hymen-edge to hymen-edge and fourchette to fourchette, and some stitches will have to be replaced. Delicate rectal sutures are readily put in close together. The fully curved needles are used, because straight needles tear the glue.

After completion of the stitching, and inspection and criticism of the operation, the student takes out his stitches. While so doing he is directed to make the mistake of cutting both sides, so that the knot comes away without the sweep of the stitch. The stitch will then lose itself in the glue, as it does in the tissues of the body, except that this process may require to be favored by a little manipulation.

Catheterization may be well demonstrated by employing a big pin to represent the catheter. The student seeks the right fold

where the meatus should be, at a given distance beneath the clitoris. Then he passes the two-inch pin in the proper direction and to the proper distance. It is amusing to see how wide of the target a student or nurse can strike. I keep old or otherwise useless glue casts to use for this purpose.

The glue casts are melted over again in a water bath and are cast again to be ready for the next section. They should not be kept over a week after casting, otherwise they harden. The stuff will stand three to five recastings before it grows too dry. Glycerin casts keep and permit more frequent casting, but stitches tear out of them far more easily than out of the glue alone.

Two hours will be required for this teaching if one goes into preliminary details and gives each student two models to stitch. If two students working together put in alternate stitches, they can compass both the incomplete and complete tear in one hour, but there will be scant time for instruction or for rectifying mistakes.

The moulds or shells in which casting is done, the glue of which the casts are made, and the colored plaster casts of the vulvas can be had of John Reynders, 303 Fourth avenue, New York. One of two methods is available:

(a) For a teacher who lives in New York, or even in Philadelphia or Boston, an order for the glue casts can conveniently be sent to Reynders. Thus, for a section of ten men who use five moulds of each kind (complete and incomplete), at forty cents a mould, the teaching would cost three dollars plus boxing and expressage.

(b) Or a teacher can own his own moulds, or shells, at six dollars each (fifteen dollars for three kinds of tear), buy his glue at thirty cents a pound, and have a boy cast the glue into the moulds, a pound making three casts, thus saving the twenty cents paid for each casting. Or he may get some Italian to cast much cheaper than this.

The colored plaster models of the vulva can be had for about one dollar each.

168 CLINTON STREET, BROOKLYN, N. Y.

A FEW OBSERVATIONS ON CYSTITIS, WITH PRESENTATION
OF A CYSTOSCOPE.¹

BY

J. M. BALDY, M.D.,
Philadelphia, Pa.

CYSTITIS is supposed to be an exceedingly common disease. A sharp line must be drawn as to what constitutes cystitis. Irritation of the bladder is one thing and cystitis is quite another. I believe that true cystitis is in practice a rare disease, and that out of hundreds of so-called cases of cystitis in our work to-day but few are such. It is an exceedingly easy thing for cystitic symptoms to appear, barring pus, in the urine from the solids in that fluid, from a nervous condition, from an irritation in the pelvis, in the vagina or the urethra. We often find all the symptoms of cystitis for which there is little need of treatment except to render the urine alkaline. Examination of the bladder by the cystoscope to establish a diagnosis has often cleared up a supposed bladder disease. One case who had been in bed for two or three months, a relative of one of the assistants of an institution with which I was connected, was catheterized through a cystoscope, the urine being drawn directly from both ureters for diagnostic purposes, and was well at the end of a week without further treatment. This is an exceedingly common experience.

The use of the cystoscope I believe is an exceedingly limited one. When it is necessary to use one I believe it should be done with all the care and antiseptic precaution of any minor operation. More harm can be done by setting up a real urethritis or cystitis than half of the patients have suffered from beforehand.

There is no question but that the direct method of examination is the best. This was the one unanimously accepted until the Seitze instrument came into use. This instrument and all modifications of it take an immense amount of study and skill to properly manipulate. It is almost impossible to use the

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, December 30, 1900.

indirect method of cystoscopy and pass the catheter into the ureters without coming in contact with some part of the bladder walls. With the direct method you can pass the instrument as directly into the ureter as the catheter can be passed into the urethra. The advantages claimed for the Seitze cystoscope over the ordinary direct method are that it is a smaller instrument and that it can be used in the office. I believe that the larger the instrument that can be used, taking into consideration the size of the urethra, the better for the patient and for the surgeon. The use of an exceedingly small instrument is of no advantage whatever. Personally, I have ceased to use the cystoscope without giving ether. I am not in the habit of using it as a routine method, but when there are distinct indications for its use I use it freely. The routine use of the cystoscope in office work is dangerous and is to be distinctly discouraged.

In the methods of direct examination almost all the instruments have had the light reflected from the outside. The light at the end of the Seitze instrument is an advantage. When Kelly perfected his own instrument for the examination of the bladder, it was suggested that an electric light could be so arranged as to reflect the light from the end of the instrument. Until within a year or so I had not seen that suggestion put into practical effect. Dr. Pryor at Atlantic City called my attention to an instrument which he had in which the light was at the end of the instrument and which passed into the bladder with the cystoscope itself. With the direct method the difficulty is that if the position of the patient is faulty the bladder will not dilate well. The bladder lies in folds and the urine accumulates. Another difficulty is the adjustment of the lights. I have at times found it exceedingly difficult with the head mirror to reflect the light indirectly into the bladder and follow with the light as you move the catheter around.

The instrument which Dr. Pryor presented to me is before us. It is practically the same instrument which we all have used for direct catheterization of the bladder. In addition to the cystoscope, there is a second tube through which the electric light passes. The instrument comes apart and can be easily sterilized. Personally, I prefer to use an instrument of this size, which requires etherization for its use, because the dilatation necessary cures the symptoms of the patient in the majority of the cases in which I use it.

I repeat that I believe cystitis in women to be exceedingly rare; the use of the cystoscope very limited—as far as catheter.

izing the ureters is concerned, I believe its use to be almost *nil*, excepting in a few cases for diagnostic purposes. I believe the greatest amount of good done in the supposed cure of the cystitis is in the dilatation of the urethra. I repeat that a large number of these bladder troubles are purely neurotic, or are purely reflex irritation from highly concentrated urines. The instrument which will do the least damage I believe is that of the direct method with the light in the bladder at the end of the instrument. It is also the easiest to use and the safest for the patient. The bladder must be thoroughly dilated and the light a good one. Cystoscopic examinations of the bladder in routine office work cannot be too severely criticised. Few men are competent to safely carry out the practice.

A REPORT OF TWO CASES OF CESAREAN SECTION UNDER
POSITIVE INDICATIONS, WITH TERMINATIONS IN RECOVERY.¹

BY

DANIEL H. WILLIAMS, M.D.,

Attending Surgeon to the Cook County and Provident Hospitals,
Chicago, Ill.

(With four illustrations.)

THE first case to which I will refer was a rachitic dwarf, age 28, primipara, with a contracted pelvis and eclampsia. The second was a multipara, age 37, with multiple fibromas, one weighing 18 pounds, filling the entire abdominal cavity above the pregnant uterus. Two others were wedged in between the pelvic parts of the uterus and the bones of the pelvis.

The dwarf was brought to the hospital in an ambulance, in a comatose condition, at 4 o'clock in the afternoon. A note accompanied her, stating that she had been treated for "dropsy" and had had convulsions for the "past twelve hours." The driver stated that she had had several spasms while in transit. She was admitted to the medical ward, and a hasty examination was made by the interne, Dr. Killion. External palpation, quickening, and fetal heart sounds determined that she was pregnant. She was transferred to the lying-in ward and an examination made. Height of patient, 45 inches;

¹ Read before the Chicago Gynecological Society, January 18, 1901.

length of arms, 14 inches; length of lower extremity from great trochanter to the external malleolus, 17 inches; square head, enlarged joints, pigeon-breasted, and incurvation of the long bones.

She continued comatose, with stertorous, puffy breathing; pupil contracted, but reacted to light; blood escaped from the side of the mouth, caused by injury to the tongue by the teeth; face puffy, extremities edematous; temperature 99°; pulse 60, hard and strong; muscular twitching of the face, flexors of



FIG. 1.—Cesarean section—Case 1, dwarf.

the forearms, and legs; some pulmonary edema; heart hypertrophied; breasts pendulous, areola extensive, gland tissue firm and abundant, striæ new and well marked, nipples prominent, colostrum present; form of abdomen spherical, median line distinct, abdominal wall tense; genitals normal but edematous; presentation breech; position L. S. A.; fetal heart sounds heard distinctly, 150 and regular; vagina relaxed; cervical effacement complete; height above pubis of navel, 5 inches; fundus uteri, 10 inches.

Pelvic measurements: Spine, 7½ inches; crests, 8½ inches;

Baudelocque, $5\frac{1}{4}$ inches; conjugata vera estimated 2 inches. Urine, catheter specimen, 1 ounce. This was examined by Dr. Walter Reed, United States Army Laboratory: reaction, acid; specific gravity, 1.020; albumin, 32 per cent by volume; casts numerous, coarse and fine, granular, fatty, and waxy; red cells in moderate number; pus cells numerous.

The urinary finding seemed to contraindicate an extensive operation, notwithstanding the fact that the literature is replete with Cesarean operations, eclampsia being the only indication. The exhibit made in the urinary analysis could not determine whether the nephritis was a temporary or permanent condition, and, as we are taught from one to another that extensive operations in nephritis are fraught with bad results, I hesitated until I could satisfy myself that I was justified in proceeding from above. The different theories advanced as to the etiology of puerperal eclampsia have not convinced me that there is not a causal relation between the kidney lesion and the eclampsia; therefore, until we get more light on the condition, we are justified in the strict conservatism that is practised by the safest obstetric operators. Would it have been possible to have safely delivered this patient by any other method than incision through the abdomen and uterus? I think not.

Symphiseotomy was considered, but abandoned on account of the pelvic dystocia, the size of the child, and the almost hopeless condition of the mother.

The late Dr. W. W. Jaggard, whom I once assisted in a symphiseotomy, afterward said "that few mothers ever recovered after a pelvic incision, and that his experience led him to believe that they always remained invalids."

Would it have been good practice to have made a crani- or embryotomy? I think not, as the child was in a bad position for either, and I think it morally and surgically wrong to kill a living child in a living mother.

Michaelis extracted a child, in the case of a dwarf, through a pelvis measuring but one inch and a half in the conjugate diameter, but not an eclamptic dwarf; Dr. Osborne, one through a pelvis but three-quarters of an inch in its narrowest portion; and Dr. Barnes, one through a conjugate of but one inch and a half. This was before the era of aseptic surgery and the finished technique of our time. Would it be permissible to attempt such an obstetric feat to-day? I think not. It would be universally condemned, as it should be. The

mortality of the Cesarean operation is so very low in patients in anything like a fair condition, in the hands of men of experience, that it has in a measure taken the place of those mutilating and forced deliveries through the vagina. In the suprapubic operation the two great bugbears of surgery—hemorrhage and infection—are very much more under the control of the operator than they could possibly be by any vaginal operation.

The serious lesions, such as perforations, rupture of the uterus, lacerated wounds, the inability of the operator to have direct control of the seat of the hemorrhage and infection, the saving of valuable time, thereby lessening shock, and the favorable statistics of the Cesarean operation, have in the past ten years influenced obstetric operators to choose the abdominal route.

Operation.—The patient was wheeled into the operating room in a comatose condition. While being prepared she had a convulsion. Alcohol, chloroform, and ether mixture was used as an anesthetic. But two drachms were given during the entire operation, lasting forty minutes. Incision extending from two inches above the pubis to two inches below ensiform cartilage. No clamps were put on bleeding points in the abdominal wall. I encouraged the hemorrhage, with the idea of lessening blood pressure, with very good effect. The uterus was delivered through the incision on to abdomen, and surrounded by hot towels. Three temporary silk sutures were put through the abdominal wall, closing it snugly about the uterine neck. A provisional rubber ligature was thrown around the uterus, just above the abdominal incision, but it was never tightened. Incision was made through the uterus in the median line, striking the edge of the placenta and causing a sudden but very temporary hemorrhage. The child was seized by the feet and extracted. The placenta was squeezed out by the open full hand. The uterus promptly contracted. The assistant controlled the uterine arteries on either side by the use of the thumb and index finger of each hand. I took the precaution of running a large glass tube through the cervix into the vagina, and irrigated through the uterus from above downward with salt solution. I did this to protect the patient from the possibility of infection from below, as her condition did not permit a proper preparation. The uterine incision was closed by three tiers of sutures—catgut just beneath the uterine mucous membrane, catgut in the muscular tissue, and fine silk into the peritoneum.

The parietal peritoneum and rectus were closed with catgut, the aponeurosis with silkworm-gut mattress suture, and the skin with silkworm gut subcutaneously. Three pints of salt solution were given subcutaneously on the table; two pints more at 12 o'clock midnight. This was continued every six hours for three days. In twelve hours the pulse had gone up to 98. Arteries were full, but not hard and bounding. Tension was very much lessened. No convulsions occurred after the operation. In sixteen hours she opened her eyes and began to talk, and from that time her recovery was uneventful.

Baby.—Weight, 7 pounds and 12 ounces. Diameters: oc-



FIG. 2.—Patient before operation.—Case 2.

cipito-frontal, 4 inches; biparietal, $3\frac{1}{2}$ inches; occipito-mental, $4\frac{1}{4}$ inches; suboccipito-bregmatic, $3\frac{1}{4}$ inches.

The second case was a married woman, age 37. She was referred to me for operation by Drs. J. R. Wilder and Robert Reyburn, of Washington. These gentlemen had established a diagnosis of tumor complicating pregnancy, which was confirmed at the operation.

History.—She had observed a nodular swelling in the right ilio-hypogastric region two years before she became pregnant. This swelling had remained stationary until after she had missed two menstrual periods, when she stated that she could notice its increase in size. This was doubtless due to its being

pushed out of the pelvis by the pregnant uterus. It increased steadily in size, until at the time she was admitted to the hospital her abdomen was so enormously distended and painful that she was unable to stand on her feet.

Examination.—Patient was fairly well nourished, but had an anemic and haggard appearance. Her abdomen was enormously distended. There was no free fluid in the abdominal cavity. A movable solid tumor filled the upper half of the abdominal cavity, pushing up the diaphragm, causing distressing dyspnea. In the lower half of the abdomen was found



FIG. 3.—Showing linear cicatrix, ensiform to pubis—Case 2.

another tumor, almost equal in size, which contained a living child. The urine had no albumin, sugar, pus, or blood. Urea one per cent.

The patient had borne several children without complications, and the pelvic measurements were adequate to deliver a child with anything like normal diameters; hence it was concluded that an operation would be made for the removal of the tumor, and allow the pregnancy to continue to full term, as she had about six weeks to complete the period.

Operation.—The incision extended from the ensiform car-

tilage to the umbilicus. The tumor could not be delivered through this opening, and the incision was continued to the pubis. The tumor was still immovable on account of its firm attachments to the abdominal viscera and omentum. It originated from the right horn of the uterus by a pedicle about one inch and a half in thickness—apparently a favorable case for a myomectomy. This tumor would have in time amputated itself from the uterus, as it was almost entirely nourished by the large blood vessels from the fatless omentum. These large arteries and veins radiated over the growth, having firm attachments to the uterus and pedicle. These vessels



FIG. 4.—Uterus, showing large tumor and lateral walls.

were ligated close to the greater curvature of the stomach and left attached to the tumor (see illustration). The adhesions to the intestines were separated at the expense of the growth, and by a crucial incision into the thin-walled uterus the tumor was removed. This would have obviated a Cesarean operation had not two additional growths of large size been found in the lateral walls of the uterus. These growths tightly wedged the uterus in between the bony walls of the pelvis and extended through the uterine body into the cavity. It was very evident that a normal delivery could not be safely managed with these obstructions in the lower uterine seg-

ment. They were flattened out by a constant pressure of over seven months, hence I concluded to make a Cesarean operation. An interior median incision was made, child extracted, and placenta squeezed out as in the other case.

At this point I found several additional growths in the uterine walls, and deemed it best to make a total extirpation of the uterus, which I did with a satisfactory result.

No provisional rubber ligature was provided; it was not needed. No serious hemorrhage occurred at any time during the operation. The anticipated hemorrhage referred to by writers did not occur in either of my cases. A good assistant to control the uterine arteries is much to be preferred to the tight constriction put about the cervix, which I think interferes very much with the normal uterine contractions by paralyzing the nerve filaments and in turn causing atony. The abdominal incision was closed as described in the first case. The mother and child made a quick recovery without an untoward symptom.

The tumor, as you will see from the photograph, was incised its full length, showing a central necrosis. This cavity contained about one pint of pus, blood, and débris.

The report on the contents of this cavity showed a staphylococcus infection. The breaking down of this central zone was doubtless due to thrombosis, which resulted in coagulation necrosis and secondary infection. The baby was profoundly anesthetized when delivered. It had the odor of ether on its breath, and it was about twelve hours before it gave evidences of its recovery.

3084 MICHIGAN AVENUE.

DRY LABOR:

REPORT OF A CASE WITH A PECULIAR HISTORY.

BY

L. W. ATLEE, M.D.,
Philadelphia, Pa.

M. B., a stout, hearty-looking woman 30 years of age, born in Ireland, was sent to me August 15, 1900, by her family physician, in reference to an abdominal tumor. She was very nervous and excited in her manner, so that it was not easy to elicit a clear history of her condition. I learned from her that

she was single and was housekeeper for her brother; in fact, that she did all the housework for him and for two boarders. Her health was always good, and she had never had any trouble at all, except at times she had had attacks of frequent micturition, which was attended with some scalding. She had always been regular as to her menses until last January; she could not recall the date (she could neither read nor write), but she had been feeling quite well all this time, and I could not get her to acknowledge that she had suffered from morning sickness. She said she had first noticed the lump in her belly about four months ago, and that she had presented herself at one of the clinics in one of our large hospitals here in Philadelphia. A careful examination was made, and she was told she had a tumor of the womb and that she had better have it cut out. She had then consulted her family physician, who advised her to wait and see how fast the lump grew, and who, as stated, eventually sent her to me.

Examination of the abdomen showed a lump that possessed all the characteristics of the pregnant uterus at between the sixth and seventh months, a pyriform tumor extending from beneath the pubes to a finger's breadth or so above the umbilicus; it was freely movable above. Palpation gave the impression of a thick-walled cyst containing fluid, and deep pressure disclosed the solid fetus contained, which also moved vigorously. Digital examination per vaginam suggested the fact that it was much easier entered than in the virginal state; the lining membrane of the passage was soft and the secretions were profuse. The os uteri was closed and the portio vaginalis was soft and edematous. The fetal heart could be easily counted by auscultation in the left iliac fossa, and what I took to be the placental souffle I made out at the left side of the tumor near the fundus. The child's head was easily reached and moved by the tip of the finger in the vagina. This was a perfectly plain case, but I weakly shirked the unpleasant task of telling the woman she was with child, and I also feared she might be tempted to do something to bring on a miscarriage; so, to the best of my judgment, I advised her to wait for some five or six weeks and then report to me again for examination. On the 25th of September she presented herself, and all the already enumerated evidences of pregnancy were more marked, and now I considered it the most expedient policy to tell the woman quietly, but plainly, her condition. This very unpleasant duty I carried out so persuasively that she confessed to

me she had been carnally intimate with one of her boarders on a single occasion. This woman was very "simple-minded"; in fact, she came near to being in the classification "weak-minded," and I am convinced she was ignorant of the fact she was with child.

I heard nothing more of this case until 8 A.M. on November 1, when, as I was hurrying out of my front door to catch a train to a suburban town where I had an engagement to attend the bringing of a patient to Philadelphia in a private car, I was stopped by a relative of the woman, who said she was in labor and that the waters "had broken" the night before. Here I was in somewhat of a predicament, with my two engagements clashing; but I found I could take a later but faster train and reach my suburban patient in time, so I went off to see my tumor case, that was going "to come out into the woman's arms." She was walking about the bed-room and complained of intermittent pains in the region of the sacrum. The "waters," she said, had come away the night before at 9 P.M. I found the vertex presenting and low down, but I could not find the os until I examined with two fingers and raised the vertex, when I managed to reach the os high up and behind it. The os was thin and soft, and dilated to about the size of a nickel five-cent piece. Of course the anterior wall of the uterus was thus forced down and covered the vertex, and could give rise to great confusion had I not succeeded in finding the os as I did. The uterus had decidedly decreased in size from the escape of the liquor amnii, and during a pain the uterus seemed to be closely applied to the child. As it was evidently so early in the labor, I decided it was safe for me to leave my patient for some five hours, when, having seen my suburban case safely conveyed in an ambulance to his home, I revisited the woman in labor, reaching the house about 1:30 P.M.

I found no change in her condition beyond the fact of the os having dilated to about the size of a dollar. She said no more waters came away when she had pains. She passed her urine without trouble and had had a good alvine evacuation, and she also kept much of the time on her feet, as I had advised. She was also able to take some light nourishment. So far there were no indications for action, though the use of Barnes' dilators suggested itself; but I decided to await developments—a decision in labor cases which I have not often had occasion to regret. At 9 P.M. I returned to her again, and now found the os completely dilated and the vertex well engaged. She

said the pains were now very frequent and painful, and in examining during a pain the impulse given to the presenting part was quite decided. I felt reasonably hopeful now that there was soon to be an end of the labor. The perineum was neither thick, hard, nor rigid, and the pelvis was roomy. The pains continued all night and caused much complaining, for which I gave a few drops of chloroform on a handkerchief. As soon as a pain came on she called piteously for the handkerchief, and, as I say, a few drops seemed to give complete relief. By 5 o'clock the next morning the vertex was just on the perineum, which it slightly distended. From this time until 10 A.M. the pains were very distressing, but did no work; the head, in fact, receded so that the perineum no longer bulged, and I was convinced the reason for the non-advance of the head was due to the feeble contractions of the uterus and not the rigidity of the perineum. I now proposed to be allowed to apply the forceps, telling the woman's relatives that the child's life would be probably sacrificed by further waiting. I could at this time hear the fetal heart sounds distinctly. They would not hear of it, so I then gave the woman a hypodermatic of a quarter of a grain of morphia, to let her rest, and hoping the pains would thus be strengthened after her vital forces had been given a chance to recuperate. She slept for about one hour and a half, and when she awoke the pains did seem to be more effective for a short time. Then I gave her fifteen drops of fluid extract of ergot every fifteen minutes for six doses; this also strengthened the pains, but by 5 P.M. the pains ceased entirely. All through the labor I had carefully watched the bladder, which until this time she had been able to empty; but now I had to use a soft catheter to relieve her, and an enema was given to relieve the rectum, but it brought away nothing. I could no longer hear the fetal heart, and begged to be allowed to use the forceps, but was refused. The night passed quietly, the woman sleeping much of the time and taking some light nourishment occasionally. Her pulse continued 82 to the minute, the same as it had been when I first saw her. The temperature was normal all the time. At 8 A.M. I persuaded the family it was not to be hoped the labor would terminate naturally. The vertex was still on the perineum, but not bulging it any; a profuse discharge was escaping from the vulva, and it was indeed time to interfere. Having placed her in position and put her under the influence of chloroform, I gave the handkerchief and bottle to the friend

who was acting as nurse, and explained how she was to use it. The extraction of the head required but little force, though the presence of the forceps, contrary to the usual result, did not excite the least uterine action; but as I drew the head out the uterus closely contracted down on its contents as the effect of vigorous rubbing of the fundus, and continued rubbing caused the child's body to follow the head without any interference. The child was most evidently dead, but the form was gone through of trying to revive it—hot bath, artificial respiration, inflating the lungs with an English catheter, etc.—but not the slightest sign of any response could be brought about.

The third stage of the labor was uneventful, and the soft parts showed no injury beyond a slight tear at the fourchette. Nothing out of the common occurred during the puerperium, and she was up and about on the tenth day, feeling quite recovered—a much happier termination than I had looked forward to.

From a medical point of view it is greatly to be regretted the life of the child was lost, but there is every reason to believe this would have been avoided had I been permitted to assist the woman with the forceps when I first desired to. Lusk tells us "there is nothing that requires more judgment in midwifery practice than to decide when the time has arrived at which delay is fraught with more danger than active interference. For my own part, I believe that many fair lives are needlessly squandered because of excessive timidity begotten of imperfect obstetric teachings."

In the translation of Francis Mauriceau's "Diseases of Women with Child and in Childbed," London, 1737, chapter x., "Laborious and Difficult Labors," he says: "Besides, those things which are or may be contained in the womb with the child do also cause difficult travail; as when the membranes are so strong that they cannot be broken, which sometimes hinders them from advancing into the passage; or so tender that the waters break too soon, for then the womb remains dry"; and in the treatment for these conditions, "if the membranes are so strong as that the waters do not break in due time, they may be broken by the fingers, provided the child be come very forward into the passage and ready to follow presently after, for otherwise there is danger that by breaking these waters too soon the child will remain dry a long time; and to supply that defect you must moisten the parts

with fomentations, decoctions, and emollient oils, which can never be so well as when Nature doth its own work with the waters and ordinary slime, which always happen well when they come in time and place."

Velpeau, in his "Elementary Treatise of Midwifery" (the title of which would suggest him to be a very modest man, for a more complete work on the subject, and one that will better repay a perusal even at this late date, I have as yet not had the good fortune to find to my hand), writes fully of the dangers arising from a premature rupture of the membranes and their effects on the mother and fetus.

Cazeaux, in the "Traité Théorique et Pratique de l'Art des Accouchement" (and who could not write a "Practice of Midwifery" with this classical and most complete work on this subject at his elbow?), states "the membranes are ruptured at the beginning of labor, the which in general renders it longer and more difficult; it also becomes more dangerous for the child, above all where much of the waters escapes." He also mentions an occurrence that is important from the fact of its likelihood to give rise to confusion, where the rupture in the membranes may be high up, so that the waters escape and still the examining finger finds them intact and bulging at each pain.

Lusk teaches that "a special and dangerous form of irregularity results when the membranes rupture prematurely and the entire amount of amniotic fluid leaks away. This, to be sure, is a rare event, as the presenting part, as a rule, acts as a valve which closes the lower segment of the uterus and prevents the amniotic fluid from escaping. When, however, owing to the small size, the uneven shape, or the hindered descent of the presenting part, the accident in question takes place as a combined result of muscular retractility and the pressure of the intestines during the pains, the uterus gradually conforms to the surface of the fetus. In this way the much-dreaded 'dry labors' are produced. The consequences are far-reaching. The retraction of the muscular fibres about the child's neck in head presentations forms an impediment to natural delivery; the disturbance of the utero-placental circulation endangers the life of the child; the uterine walls applied to the convex surface of the child become anemic, while the re-entrant portions, subjected to the negative pressure, become hyperemic and edematous, extravasations take place into the tissues and the walls are rendered friable, the contractions are

associated with intense pain, and peritoneal irritability develops. The prolonged retraction of the uterus may be followed in the end by the entire cessation of pains, and paralysis may ensue."

Notwithstanding all the serious accidents which *may* arise from the premature rupture of the membranes, the great majority will be terminated spontaneously by the natural efforts, provided the presentation is good and the pelvic outlet presents no insurmountable obstacle.

Before recalling the various means we can employ for the relief of this condition, I will say with Lusk "that with increasing experience my own practice has grown more and more conservative, and my belief is that true wisdom requires us to abstain from even trivial operations *so long as Nature is able to do her work without our assistance.*"

Should the os dilate very slowly or not at all and the woman be suffering great pain, she must be relieved by some means, for this element of pain is much to be dreaded, as, when long continued, it is a powerful nerve depressant. "When combined with starvation and deprivation of sleep, it greatly impairs a woman's powers to resist the perils of the puerperal period." In this condition a prolonged warm bath, an enema of twenty grains of chloral in six ounces of warm milk, or a hypodermatic of one-quarter of a grain of morphia, will often act like a charm; and again the relief will be only very temporary, lasting perhaps half an hour. We now then resort to mechanical means to assist the dilatation of the os, by means of trying to keep the woman on her feet. When the pains are very severe and almost continuous, as they so frequently are in this condition, it will be impossible for her to do so; Barnes' water bags may then be tried, as they both dilate the os and increase the efficiency of the pains. However easy it may be to advise their use, in the case here recorded great difficulty would have been encountered to introduce them into the os so high up and behind the vertex. That it could be done by dexterity and perseverance I do not doubt. I should have placed the patient in the knee-chest position and gently pushed the presenting part out of the way, and at the same time facilitated the operation by the use of a Sims speculum.

After the complete dilatation of the os the forceps is the safest and surest means at our disposal; for by the use of ergot under these circumstances, with the uterus probably in a state of tetanic contraction, applied closely to the child, we would

but increase the retraction, but not increase the contracting or expulsive efforts. The forceps, in the form of the narrow-bladed Taylor's instrument, has been suggested even before the os is dilated and the head engaged, but, except in the hands of the most skilful accoucheur, to apply it to the movable head is a very difficult and hazardous undertaking. With the os dilated and the head engaged the application of the forceps nowise differs from its use under any other indications, and should be performed *secundum artem*.

758 SOUTH FIFTEENTH STREET.

DERMOID AND OTHER CYSTS OF THE OVARY :

THEIR ORIGIN FROM THE WOLFFIAN BODY.¹

BY

SAMUEL W. BANDLER, M.D.,
New York.

(With Illustrations.)

Ovary.—In Fig. 38 it is seen that at one point of the celom epithelium the germinal epithelium develops on the inner surface of the Wolffian body and is sharply marked off from the stroma of the latter.

Through decided increase of the germinative epithelia and the change of a large portion of them into primary ova, the parenchymatous ovary is formed. Connective-tissue cells and vessel branches penetrate *into the germinative epithelium from the stroma of the Wolffian body* and divide it into compartments. These compartments consist of primary ova and germinative epithelia, and are divided into constantly smaller compartments by the growing connective-tissue stroma.

Finally we have primary ova surrounded by a layer of germinative epithelium, the so-called "primary follicles." The superficial layer of the germinative epithelium remains as a simple cylindrical layer of epithelium covering the ovary.

Nagel and most authorities believe with Waldeyer that *derivatives of the germinative epithelium form the follicle epithelium*.

¹ Continued from p. 214, February JOURNAL.

Köl liker, Rouget, etc., say that the follicle epithelium develops from cells which may be traced back to the tubules of the primary kidney which send cell prolongations into the ovary.

Foulis says that the follicle epithelium originates from connective-tissue cells through cell division and cell increase. Wendeler says that the follicle epithelium comes from the connective-tissue stroma of the ovarian formation, and agrees with Foulis.

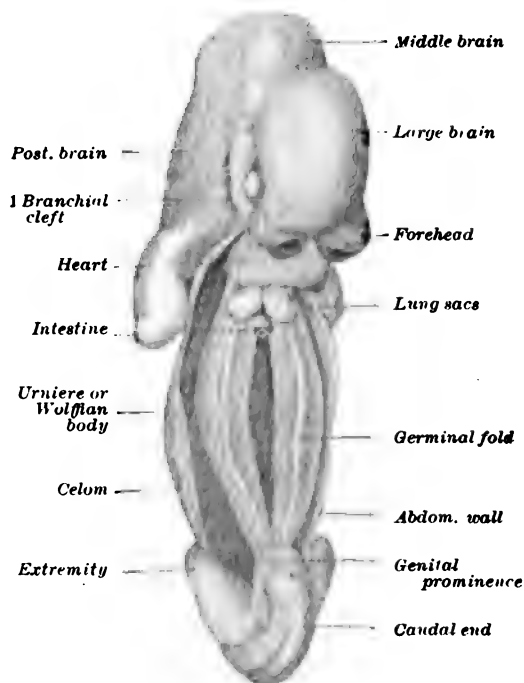


FIG. 38.—Human embryo in the fifth week, the anterior body wall removed, the urniere exposed. After Kollmann.

On the fortieth day the relations are as seen in Figs. 40 and 41.

In the beginning of the third month the relations are as seen in Fig. 41a.

During the development of the duct of Müller the Wolffian duct becomes rudimentary; often the proximal and distal ends remain, at times they disappear entirely. In the human fetus of the female sex it is found as an indistinct structure, with or without epithelium, at the side of the uterus, in every

third case. The end remains, as a rule, along the internal os, and may be seen in transverse sections.

In the development of the ovary there go out from the germinative epithelium thinner and thicker cell bands, the so-

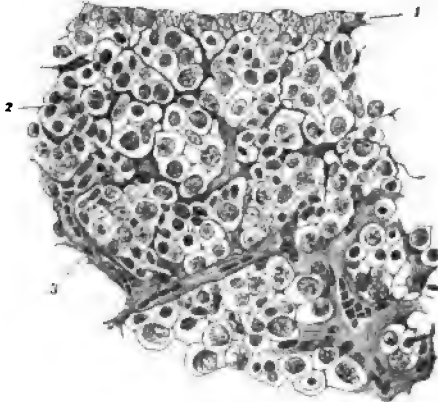


FIG. 39.—Section through the ovary of a human embryo with a body length of 11 centimetres. After Nagel. 1, external layer of the primitive ovary (later the germinal epithelium of the ovary); 2, compartments of ova; 3, stroma (vessels).

called “tubules of Pflüger.” In these tubes are found follicle cells and primary ova. Waldeyer says “that in the second year the formation of new ova can no longer be demonstrated.”

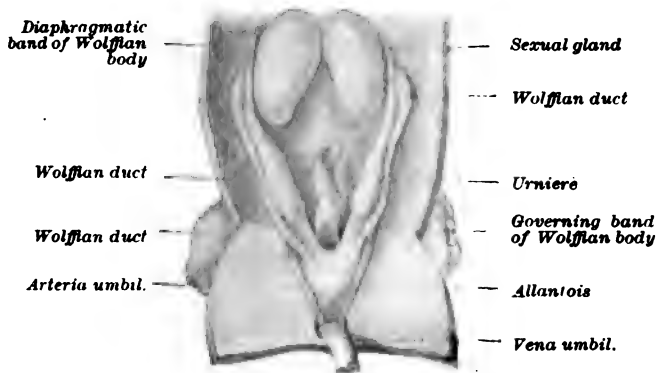


FIG. 40.—Germinative gland of a human embryo 40 days old. Two branchial clefts are still open. After Kollmann.

The epithelial prolongations which grow out of the Wolffian body into the ovary, and which penetrate the ovary, are the so-called “sexual bands” of the primary kidney; they originate from the epithelium of the Malpighian bodies and grow

toward the "tubes of Pflüger." From the latter develops the cortex of the ovary; the former take part in the formation of the medullary portion and are called "medullary bands."

According to Nagel, those connective-tissue cells which divide the generative glands into compartments originate

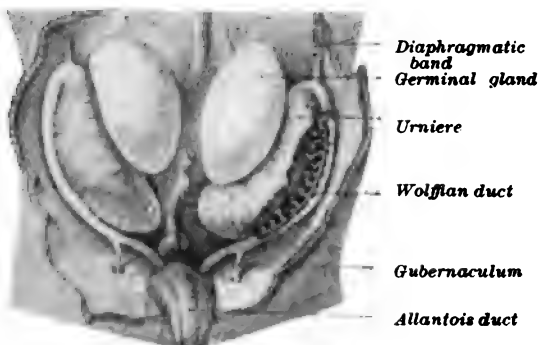


FIG. 41.—Urniere and generative gland. Human embryo 17 millimetres long at the beginning of the sixth week. To the right the Wolffian duct is opened. After Kollmann. Enlarged 16 \times .

from the stroma of the Wolffian body without participation of the Wolffian canals.

Fig. 43 shows the relations after complete development.

The parovarium (epoöphoron) results from the cephalic

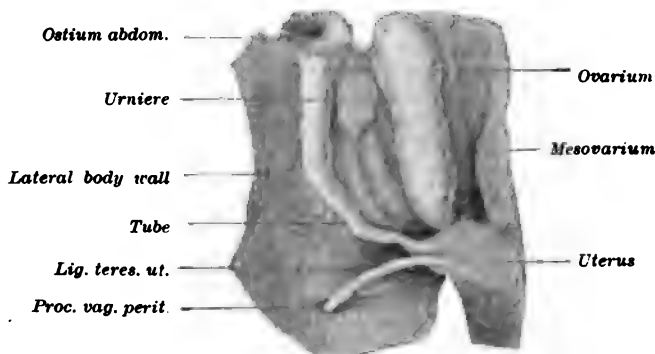


FIG. 41a.—Tube, uterus, and ovary of the right side. Beginning of third month. After a fresh specimen. After Kollmann.

end of the primary kidney. It consists, in a fetus of nine centimetres, of a portion of the Wolffian duct and ten to fifteen transversely running tubules (epididymis in man).

In the newly-born it is easily found. In the developed female it is found with difficulty or is absent.

The paroöphoron lies distal to the parovarium. It originates from the caudal end of the primary kidney and consists of small twisted tubules lined with ciliated epithelium and disappearing vessel knots (parepididymis in man).

In man the testicle receives its specific tissue elements

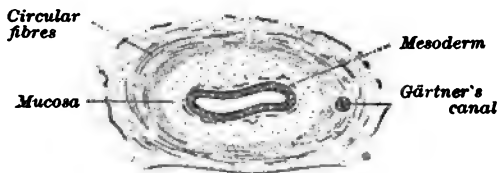


FIG. 42.—Sexual band. Transverse section through the uterus. One-half the natural size. After Tournoux. 10.5 centimetres from head to coccyx.

directly from the germinative epithelium. This epithelium furnishes the primary seminal cells. The tubules which grow from the primary kidney into the testicular formation (the sexual bands) furnish an outlet to the semen, so that the

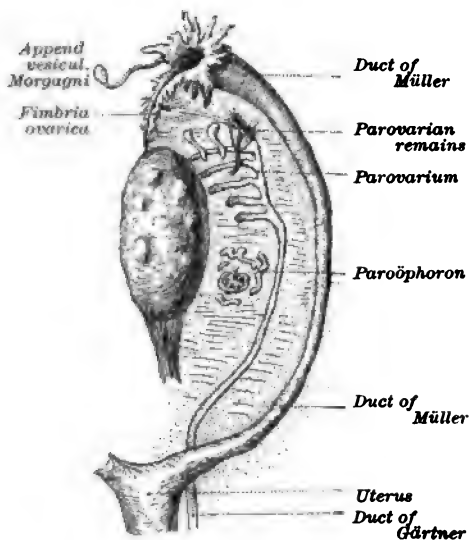


FIG. 43.—Relation of the Wolffian duct and ducts of Müller in female embryo. Schematic. After Kollmann.

seminal tubules, the tubuli seminiferi, originate from the germinative epithelium, the tubuli recti and rete testis from the primary kidney. The Wolffian duct forms the vas deferens. The cephalic portion of the primary kidney forms, as has been said, the rete testis, the tubuli recti, the epididymis—i.e., the

head of the epididymis. The tail of the epididymis is formed from the beginning portion of the vas deferens.

The lower end of the primary kidney disappears. There are found in older embryos, between the vas deferens and the testicle, for a long time small twisting tubules, between which disappearing Malpighian bodies occur, and the whole forms a small yellow body. In adults these remains are small; they furnish the vasa aberrantia of the epididymis and the paradidymis of Giralde's. The ducts of Müller disappear in man as meaningless structures. In their middle portion they disappear almost entirely, but during embryonal life they are present as epithelial strands.

The lower ends of the ducts of Müller become the uterus masculinus, the separating wall disappears, and they unite into a small tube which lies between the outlet of the vasa deferentia and the prostate. They are called "sinus prostaticus" and correspond to the vagina.

The upper ends of the ducts of Müller may form hydatids, small vesicles which are found upon the epididymis and are lined with ciliated cylindrical epithelium, and may continue into a small ciliated duct. At one point they possess a cyst-like opening. As in man, from the epididymis, tubules grow in the substance of the testicle, forming the rete testis and the tubuli recti, so, in the female, tubules pass out from the parovarium into the medullary substance of the ovary and form the medullary bands. The anterior end of the duct of Müller, which in the embryo is situated very far forward, seems in the female to disappear and the permanent opening probably develops anew. This disappearing portion forms, perhaps, the hydatids of Morgagni, small vesicles which are united by a longer or shorter pedicle to a fringe of the abdominal end of the tube.

Parovarian remnants occur, as a rule, on the anterior layer of the ligamentum latum above the enclosed parovarium. There are found funnel-shaped pedunculated growths with the opening toward the abdominal cavity and furnished with ciliated epithelium. Two funnel-shaped openings with one pedicle also occur. Cystic remnants corresponding in position, size, and form also occur, but in place of the funnel-shaped opening a cyst is present, which is always lined with ciliated epithelium (Kollmann).

Grape-like growths also occur. In structure they are like the above-mentioned forms, but at the free edge is found a dilatation lined with ciliated epithelium.

All these show a remarkable resemblance to the funnel-shaped remnants and the pedunculated hydatids found in the epididymis. These remnants are to be considered embryonal rests. They are probably an old inheritance, *remains of multiple segmental communications between the primary kidney and the celom* (Kollmann).

Tubo-parovarian canal is a rudimentary canal passing off from the parovarium and lined with ciliated epithelium, which opens in the end portion of the tube or more frequently upon the fimbria ovarica.

A similar canal occurs which, however, does not open on the fimbria ovarica. It may be considered as a rest of the Wolffian duct. At the opening of the tube there is often a cystic vesicle, a hydatid of Morgagni. It is a question whether it comes from the tubules of the primary kidney or from the anterior end of the duct of Müller. In the disappearance of first formation of the latter such a hydatid might be formed, but then a new tube opening would have to be created.

Nagel says that the main canal of the parovarium runs parallel to the tube, and that it ends blindly in its upper end, at times in a small cyst, the hydatid of Morgagni; that toward the median line it may be followed as the duct of Gärtner up to the uterus. At times remains of it are present in the lateral walls of the body of the uterus and the cervix, and, rarely perhaps, in the upper part of the vagina. The tubules lie close together toward the ovary, ending, as a rule, blindly at the hilus, but at times they pass on, as has also been found in adults, into the zona vasculosa ovarii.

De Sinéty and Flaischlen have found in apparently normal ovaries of individuals, in whom the other or even the same ovary was changed to a cystoma, that *the surface epithelium of the ovary was ciliated*; normally such a condition could not exist (Nagel).

The ligamenta lata embryologically represent the epithelial covering (celom epithelium) and the connective-tissue basis of the Wolffian body.

Ovarian Cystomata.—Wendeler says that the cells which are the cause of the epithelial tumors of the ovary may be either the surface epithelium, the follicle epithelium, or the medullary strands. The latter are tubular rudiments of the Wolffian canals, penetrating to a greater or lesser extent into the hilus of the ovary.

To explain the origin of cystadenomata of the ovary, these

epithelial cells have by different authors been differently considered as the cause.

Klebs believes that the cystadenoma glandulare develops from the tubules of Pffüger in the fetal or child's ovary, with later development at puberty.

Waldeyer believes that it originates from the tubules and compartments of ova from which the Graafian follicle develops. This occurs either in the early years or later from tubules which are abnormally developed from the germinal epithelium.

Olshausen believes that cystadenoma papillare develops from the parovarium, because it contains ciliated epithelium and may develop intraligamentally.

Von Kölliker believes that it originates from the membrana granulosa of the follicles; he considers this follicle layer to be a derivative of the medullary strands and therefore of the parovarium.

Marchand says that it originates from the Graafian follicle or from structures which are equivalent and which probably come from the surface epithelium of the lateral walls of the ovary.

Flaischlen considers that it originates from the germinal epithelium.

Velits believes the Graafian follicle to be the point of development.

Nagel believes that they originate from the germinal epithelium and *never from the follicle epithelium*.

Steffeck traces their origin to the follicle epithelium, and believes that the germinal epithelium is likewise concerned.

Williams outlines three modes of development: 1. From the Graafian follicle. 2. From the germinal epithelium. 3. From the epithelium of the tube.

Kossmann believes these tumors to originate from abnormally situated islands of tubal epithelium (analogous to the accessory tube).

Pozzi and Beaussenat believe that they originate from the germinal epithelium, from the tubules of Pffüger, and from the Graafian follicle.

Burckhard considers the multilocular cysts to originate from the tubules of Pffüger.

Orth says that the carcinomata and cystadenomata glandulare and papillare originate from the germinal epithelium, or from the follicle epithelium, or from the medullary strands.

Zweifel and Hofmeier say that the follicle is the point of origin.

Pfannenstiel believes that the cystadenomata pseudomucinosae develop from the primary follicle.

Wendeler says that they do not originate from the follicles, for, in his opinion, the follicle epithelium does not originate from the germinal or any other epithelium, but from the fetal connective tissue of the Wolffian body. He believes, further, that the epithelial covering of the ovary is to be considered the matrix of all the epithelial ovarian tumors.

Wendeler mentions that Pfannenstiel has shown us that tubular depressions of ciliated cylindrical epithelium may originate *from every point of the ovarian surface*, and that *at every point of the surface* of the ovary ciliated epithelium may be found in pathological conditions.

It is worthy of mention that the pathological conditions in the ovary could be easily explained if we were to change this observation and let it read: the pathological conditions stand in a causal relation to the frequently found ciliated epithelia in pathological conditions of the ovary. This view finds support in the fact that Kossmann believes that cystomata glandulare and papillare originate from displaced islands of "Müller's epithelium." Because of its importance I quote the following by Wendeler:

"Kossmann considers it strange that out of the apparently non-functionating surface epithelium of the ovary, in which at no time a mucous secretion has been found, there should be formed in these cysts an epithelium so differently formed and characterized by an active secretion of mucus. He believes that these objections may be overcome if we consider the glandular and papillary cystomata to originate from islands of 'Müller's epithelium,' in these cases from epithelium of the 'cervical type.' He takes it for granted that (analogous to the conditions which are normal in the lower vertebrates) in human beings, frequently in addition to the abdominal end of the tube, other accessory formations result which are to be considered as rudimentary ducts of Müller, presenting more or less deep depressions and also flat insular areas of ciliated epithelium. Just as the epithelium of the normal duct of Müller is differentiated in its various sections, so that at its proximal end it is a ciliated epithelium in the tube and uterus, and at its distal end it is the mucus-secreting epithelium of the cervix, in the same way does Kossmann consider it much more probable that in a rudimentary duct of Müller, even if it is only an inversion in the ovary, a part of the epithelium takes on the cervical character. He considers this more probable than that from the non-functionating rest of the germinal epithelium (the surface epithelium of the ovary) cyst formations should result resembling histologically the retention cysts of the cervix. Kossmann calls to mind

as proof of this hypothesis the recent view of Ribbert *that the isolation of cell complexes from their normal connection, and the removal thereby of normal control of growth, is to be considered the cause of neoplasms*. There is no question that Kossmann's proof of a relatively high percentage of paratubal formations speaks decidedly for the possibility of analogous displacement of 'Müller's epithelium' upon the surface of the ovary, and furnishes this clever hypothesis with a powerful support. In fact, we are relieved of all difficulties by this theory of Kossmann, according to which the serous (papillary) as well as the glandular cystadenomata and also the simple non-cystic adenomata are supposed to develop from displaced groups of 'Müller's epithelium.' I am inclined to accept this theory, and will only add that we must naturally, therefore, refer the origin of malignant neoplasms to the same source."

What Kossmann says against the origin of these tumors from the germinal epithelium may be likewise quoted against the follicle epithelium and the medullary strands, so that it is scarcely necessary to criticise the different views concerning the origin of cystadenomata.

Nagel says:

"Von Franqué found an unusually large number of primary follicles in an ovary of a 20-year-old girl; the other ovary was degenerated into a cystoma. Von Franqué agrees with Hellin that women with such ovaries are inclined to multiple pregnancy. In the same ovary Von Franqué found *extensions of the parovarian tubules in all parts of the ovary, also in the zona parenchymatosa up to the surface of the ovary; here and there cysts had developed from these tubules*. Since the other ovary was changed to a cystoma, this condition—contrary to the view of Von Franqué—is of value in supporting the view of Cornil and Von Recklinghausen *that these cystomata develop from remnants of the primary kidney*. Von Franqué describes further the ovaries of a fetus 48 centimetres long, with increased physiological activity, so far as the formation and disappearance of Graafian follicles is concerned: the stroma of the ovary showed no changes; a strong hyperemia of the pelvic organs was noted. There is no need—contrary to the view of Von Franqué—to consider this condition pathological and to grant it the name of 'small cystic degeneration.'"

From our embryological illustration and from the other observations and quotations we observe the following facts:

1. The pronephros furnishes, through its tubules, direct communication between ectoderm and celom.
2. The Wolffian duct, if it does not develop from the ectoderm,

lies at least *closely united to the ectoderm*. Its tubules pass through the mesoderm up to the celom.

3. The further the Wolffian duct goes in its course to the cloaca *the more is it separated from the ectoderm*.

4. The ovary is developed from cells of the germinal epithelium. Cells from the Wolffian body are concerned in its development. The tubules of the primary kidney may themselves be taken up in forming the ovary.

5. Although the tubules of the parovarium usually end blindly at the hilus, they may, according to Nagel, extend into the zona vasculosa ovarii, and

6. The parovarian tubules may be found, as Von Franqué has shown, in all parts of the ovary, even under the surface.

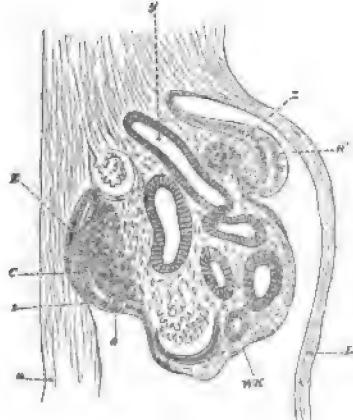


FIG. 44.—Transverse section through the Wolffian body (urniere), duct of Müller, and the germinal gland of a chicken at the fourth day (Waldeyer). WK, urniere; y, Wolffian duct; m, mesentery; L, posterior body plate; a, germinal epithelium from which the anterior end of the duct of Müller (Z) has originated; n, thickened part of the germinal epithelium in which the primary germinal cells C and o lie; E, modified mesenchym from which the stroma of the germinal gland is formed.

7. According to Cornil and Von Recklinghausen, the cystomata develop from rests of the primary kidney.

8. The ligamentum latum represents the epithelial covering, celom epithelium, and the connective-tissue basis of the Wolffian body. Fig. 44 shows the close connection of these structures during embryonal life.

9. The various parovarian formations of the ligamentum latum show ciliated epithelium, and are *rests of multiple segmental unions between the primary kidney and the celom*.

10. These structures originate in the mesoderm (but not from the mesoderm), near the celom; certain cells of the ger-

minal epithelium form the ovary and the ducts of Müller. The ducts of Müller contain ciliated epithelium and furnish the epithelium of the cervix, high cylindrical cells with nucleus at the base.

11. Kossmann considers that the cystadenomata develop from islands of "Müller's epithelium," because the cells of a cystoma glandulare have the "cervical type."

12. The isolation of cell complexes from their normal relation, and the thereby removed control over normal growth, is to be considered the cause of neoplasms.

13. The ovarian epithelium is frequently ciliated in cases in which the one or other ovary contains cystomata.

14. Kossmann's theory does not explain the frequent occurrence of the intraligamentous and intraovarian cystadenomata.

15. Olshausen believes that the proliferating cystomata originate from the parovarium, because they contain ciliated epithelium and are frequently intraligamentous.

16. As we shall later see, the same cystadenomatous growths are found *in the tissue of dermoid cysts of the ovary and testicle*.

17. Cystadenomata are frequently combined with dermoid cysts in the same or other ovary.

18. In Marchand's case of a retroperitoneal dermoid cyst, cysts were present of the same character as cystadenomata of the ovary.

19. The mixed tumors of the kidney and the dermoid cysts of this region develop from cells, including ectoderm cells, which have been displaced from their normal position. The primary kidney is responsible for this change.

20. The mixed tumors and dermoid cysts of the cervix, vagina, and bladder are caused by a displacement of cell complexes by the growing Wolffian duct.

We may therefore draw the following conclusion:

The pronephros, the primary kidney, and the Wolffian duct, through their position in the mesoderm, their connection between ectoderm and celom, their relation to the normal development of the ovary, their future position at the hilus of the ovary, the position of the tubules of the primary kidney near the hilus, their growth through the hilus into the zona vasculosa, their growth through the ovary even up to the surface, through the fact that their rests furnish the ciliated growths of the ligamentum latum, are capable of carrying with them ectoderm and mesoderm cells up to or into the ovary, and of

forming ectodermal and mesodermal products and structures lined with ciliated epithelium.

In this way the mesodermal tumors, the mixed tumors and dermoids of the ovary and testicle originate. I believe that the cystadenomata glandulare and papillare are developed from the Wolffian body or from ectoderm cells displaced by it, since these structures to a greater or lesser extent occur in every dermoid cyst of the ovary and testicle. The cystadenomata of these organs are not infrequently bilateral, and in the ovary are frequently combined with dermoid cysts. Ziegler says: "The cystadenomata may be united with dermoid formations; cystadenomata of the testicle frequently include in the stroma cartilage centres, or show other tissue forms, so that we must call these growths 'teratomata.'"

I believe that this fact speaks for a displacement of cells for which the Wolffian body is responsible. In describing a case which had been called "myxosarcoma" of the testicle, Wilms says: "The entire tumor is made up of young embryonal connective tissue, cartilage, smooth and striated muscle, some squamous epithelium, cysts and tubules lined with cylindrical epithelium, which showed glandular structures in their neighborhood." "The name 'myxosarcoma plexiforme' is therefore incorrect, even though in certain areas this tumor resembles that form. A simple consideration of the tissues of which the tumor is composed shows that we have the products of all three blastodermic layers. It therefore seems justified to state that the tumor has developed from a germinal formation containing the three blastodermic membranes. If we consider the tumor from this standpoint, there is nothing strange in the presence of squamous epithelium or cartilage or striated muscle, and we are forced to consider it a teratoma."

Wilms believes that all three blastodermic layers are represented, because he makes the error of considering the cystadenomatous structures to be entoderm. The fact that around these structures muscle fibres were grouped leads him to call them intestinal structures. I mention the following cases to show that the same error has been made by others.

In his case Marchand described the cyst formations in the following terms: "The largest, on opening, showed thick, cloudy, grayish contents, like the contents of an ovarian cyst. The entire inner surface is lined with well-preserved simple ciliated epithelium, consisting of rather short cubical cells with long nucleus." Concerning another cyst he says that

"the mucous membrane has the character of *the mucous membrane of the large intestine*; the inner surface was lined with high, delicate cylindrical epithelium; in stained sections there was found an external longitudinal and an internal thicker transverse layer of smooth muscle fibres. The mucous membrane showed numerous tubular glandular depressions, which were lined with *distinct beaker cells like those of the large intestine*."

From the case of Weigert which has been quoted I mention again the following sentences:

"One space is remarkable because of its peculiar form; it has the form of intestine or a sausage. In transverse section it has a lumen which is star-shaped through the projecting longitudinal folds. The epithelial elements of the cystic spaces are of three forms: 1. Most rarely they have a lining of stratified squamous epithelium. A second form is lined with simple cylindrical epithelium consisting of high cells with peripheral nucleus. On the surface there is found in the larger spaces a cloudy mucus which in the deeper divisions shows a form corresponding to cell boundaries. Such masses of cells rest upon a connective-tissue basis, partly in long tubules with long lumen or in cystic spaces. They clothe further the above-mentioned tubular bodies. They do not lie here as a simple layer on the projecting folds, but form very regular closely lying tubular glands *of the form of the glands of Lieberkühn*. They rest upon a firm layer, next to which is a loose layer which is sharply lined off from the external membrane. The latter consists of well-developed smooth muscle fibres which are arranged in two layers, an inner circular and an incomplete external longitudinal layer. In the connective-tissue stroma lie here and there large groups of lymphoid cells. The cysts of the third form are lined with a stratified ciliated epithelium."

Neumann described a dermoid of the ovary in which he found

"A small space the size of a pea; its wall is thick, its lumen filled with tenacious mucus, the inner surface lined with a soft membrane. Near it is another like structure, which differs in its external form, in that it represents a long, intestine-like tube. Sections through this space give a picture *corresponding to the normal intestinal wall*: internally is a mucous membrane in which numerous closely grouped tubular glands with well-developed cylindrical epithelium are found; they are bounded by a muscularis mucosæ under which is a loose connective-tissue submucosa, and externally is a thick layer of smooth muscle fibres arranged in layers crossing at right angles. In this part of the tumor where the intestine-like cysts and the smaller dermoids are, were found remnants of ovarian tissue with follicles and a corpus luteum."

Concerning cystadenoma pseudomucinosum Gebhard says: "These peculiarities are found most distinctly in the so-called 'grape-like cystomata of Olshausen,' in which the individual cysts hang from small pedicles, so that the whole tumor has the appearance of a large hydatid mole." Olshausen explains the origin of these peculiar formations through the theory of accessory ovaries. Pfannenstiel believes that they develop from remnants of the Wolffian body—an explanation which is undoubtedly correct. As may be seen from Figs. 55 and 56, the tubules in the cystadenomata of the ovary have an absolute resemblance to those mentioned in the cases of Marchand, Weigert, Neumann, and Wilms. Beaker cells make the resemblance still closer, and in these, as in the other three cases, the same form of tenacious mucus is found contained. Since, according to our theory, these cysts of the ovary develop from certain cells of the ectoderm, or, better still, from the Wolffian body (ectodermal origin), and since the kidney dermoids (retroperitoneal) also are caused by the urniere, and since the cystadenomata of the latter originate in the same way, we may accept a common origin for all these intestine-like tubules—viz., from ectoderm. The same holds true for the dermoid cysts behind the eye, and also for dermoids of the hypophysis duct, in which the same intestine-like tubes were present. In a preliminary article¹ I said that the cystadenomata of the ovary originate from displaced entoderm cells, because their glands were like those of the intestine (high cylindrical epithelium with nucleus at the base, beaker cells, mucus, etc.). I supported this view on the hypothesis of Waldeyer and Hertwig that the celom epithelium was of entodermal origin. The following discussion will show, however, that those cells of the celom epithelium which are concerned in the formation of a cystadenoma are really ectoderm cells, and, therefore, all these tubes and glands, as well as the glandular structures lined with cylindrical epithelium and ciliated epithelium, are to be considered in all the quoted cases as ectoderm products.

Kollmann says:

"The peritoneum consists of changed mesoderm; it furnishes the sexual cells which fulfil the duty of propagating the species. From the internal blastodermic layer develop the epithelia and the gland layers; from the mesoderm are developed genuine epithelia (?), as also the ducts of Müller and of Wolff and the primary kidney, and the epididymis as well as the epithelia of the kidney, in so far as this organ is derived

¹ Berliner klin. Wochenschr., 1900, No. 9.

from the Wolffian duct. The mesoderm furnishes, in fact, *two entirely different tissue forms (?)—namely, muscle and connective-tissue elements on the one hand, and on the other hand epithelia* which, because of their origin, may be best called 'mesothelia.' Mesothelium is found, in addition to the mentioned organs, on the inner surface of the celom, and on the inner surface of the vessels in the form of endothelia, and also in the ovary as follicle cells. In the region of the excretory apparatus mesoderm retains for a long time the power to form epithelium *which resembles that of the intestinal canal.*"

This fact explains the reason wherefore structures which originate from the Wolffian duct and the Wolffian body cause glands and tubes which have by so many authors been considered to be intestine-like. Since these organs are of ectodermal origin, we may understand why these same structures may occur in tumors in other parts of the body where the ducts of Wolff and the Wolffian body are not present. Further, it is strange that mesoderm which forms the so-called "connective-tissue elements," among which no epithelial tumors occur, should also form epithelia. Therefore, Kolmann says: "Because of this fact the idea has been put forward that the blastodermic layers have no value as regards histogenesis, and embryology finds itself to-day accepting this view more and more. We consider two epithelial layers, ectoderm and entoderm, and believe that from them all other tissues develop. The results of this theory are extensive. Within the limit of embryology, therefore, the theories as to normal tissues cannot remain confined, but *advance into the realm of pathological histology* and cause there a no less extensive change and uncertainty in the judgment of many tumor forms."

This pessimistic view may be overcome if we consider that not alone the Wolffian duct and the Wolffian body, but also the ovary and its germinal epithelium, are of ectodermal origin. Hertwig says: "From the external layer develop the epidermis, the epidermoid organs, such as hair and nails, the epithelial cells of the skin glands, the entire central nervous system and the spinal ganglia, the peripheral nervous system, the epithelium of the eye, ear, nose, etc., the lens of the eye."

The primary inner layer is divided into:

1. The secondary internal layer, or intestinal gland layer.
2. The middle blastodermic layers.
3. The chorda.
4. The mesenchym cells.

Spee has plainly shown, however, that the chorda does not develop from entoderm, but from ectoderm.

Many believe with Spee, and against Hertwig and Waddeyer, that the peritoneum is not of entodermal origin, and that it is no epithelium at all, but only connective tissue.

As regards the ectodermal origin of the Wolffian duct, the Wolffian body, and the ovary (partly) and its germinal epithe-



FIG. 45.—Transverse section through rabbit embryo.

lium, the accompanying drawings, taken from specimens of Prof. Spee, will show that this is not to be questioned.

In Fig. 45 are seen ectoderm (*Ect.*), the Wolffian duct (*W.G.*), the medullary plate (*M.C.*), chorda (*Ch.*), aorta, entoderm (*Ent.*). It is seen that the Wolffian duct has become outlined from the ectoderm, with the exception of two cells which at the same time form part of the wall of the Wolffian duct and establish the continuity of the ectoderm.

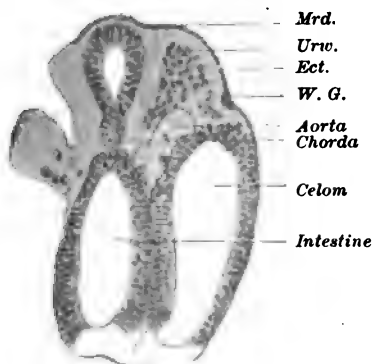


FIG. 46.—Transverse section through guinea-pig embryo.

Fig. 46 shows the medullary plate (*Mrd.*), primary vertebra (*Urv.*), the Wolffian duct (*W.G.*), aorta, chorda, celom, and intestine. We see the connection between ectoderm (*Ect.*) and the Wolffian duct.

Fig. 47 shows the area (*W.G.*) taken from three different

sections. It may be seen how in *a* the Wolffian duct is not entirely separated and independent of the ectoderm, while in *b* and *c* this change has almost taken place.

In Fig. 48 we see the medullary plate, myotom, chorda, aorta, the Wolffian body (*Urn.*), the duct of Müller (*M.G.*),

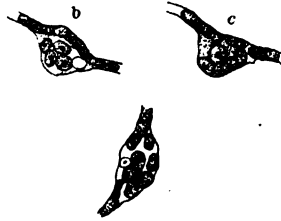


FIG. 47.—Wolffian duct.

the celom, mesentery, intestine (it is not possible to say whether *M.G.*, Figs. 48, 49, etc., is the duct of Müller or a part of the Wolffian body). At that point where the duct of Müller and the urniere lie is found later the germinal epithelium and the ovary.

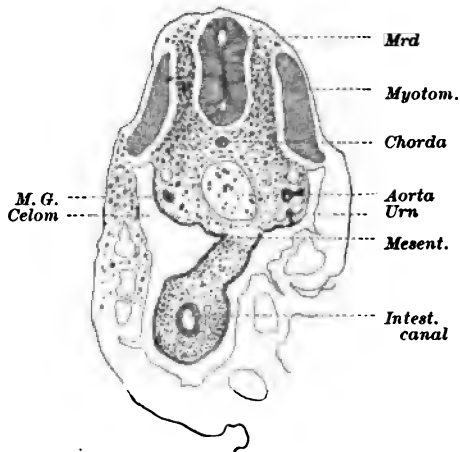


FIG. 48.—Transverse section through guinea-pig embryo.

The Wolffian duct has therefore separated from the ectoderm, and has made its way deeper down to the celom, and has taken with it those elements from which not alone the primary kidney and its tubules develop, but also ectodermal elements from which the germinal epithelium originates.

I show four drawings from various sections which make

these facts clear. In Fig. 49 is seen aorta, a vessel, the duct of Müller, the urniere with a tubule (*U. C.*), which in Fig. 50 is still clearer, although here the connection between the tubule and the Wolffian duct is interrupted through the plane of the section. *K. E.* represents the germinal epithelium.

In Fig. 51 we see only parts of the wall of the tubule (*Urn.*), the Wolffian duct, and the duct of Müller. In Fig. 52 we see the urniere and the Wolffian duct in the form seen in Fig. 26.

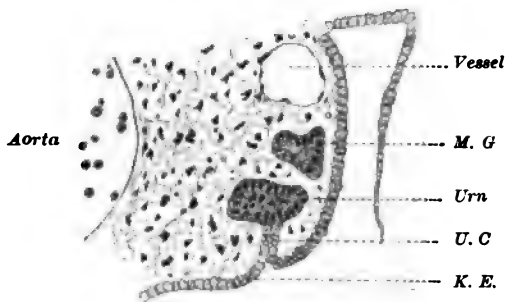


FIG. 49.—*M. G.*, Fig. 48, strongly magnified.

It follows, therefore, that the tubules of the primary kidney are developed from the Wolffian duct and not from the celom. Spee says that in this way ectoderm cells are brought to this part of the celom, and that from these the germinal epi-

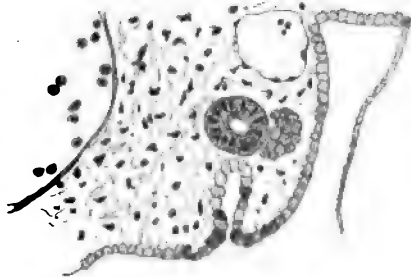


FIG. 50.

thelium and the ovary develop, so that ovary, primary kidney tubules, Wolffian duct, and duct of Müller are all ectodermal products. Since these, at least partly, are lined with ciliated epithelium, and since from them structures develop which resemble the epithelial tissues of the intestine, we can understand that from ectoderm tumors may develop of the kind observed in cystadenomata of the ovary, in cystadenomata of the kidney region, in dermoid cysts of the eye, and in der-

moids of the hypophysis duct. Ciliated epithelium, glands with beaker cells, develop normally in these regions from ectoderm, such as salivary glands, the ciliated epithelium of the nose, the ciliated epithelium in the hypophysis duct, etc. Von Recklinghausen says the following concerning the epithelium of the Wolffian body ("The Adenomyomata and Cystadenomata of the Uterus and the Tubal Wall; their Origin from Rests of the Wolffian Body"):

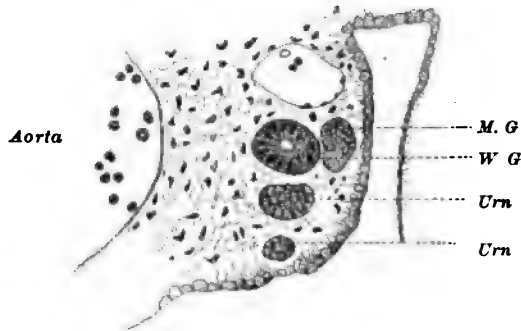


FIG. 51.

"1. Already in the early embryonal period the epithelium of certain areas of the tubules of the Wolffian body, and, in fact, those cells which at their height of development are cylindrical, are furnished with cilia.

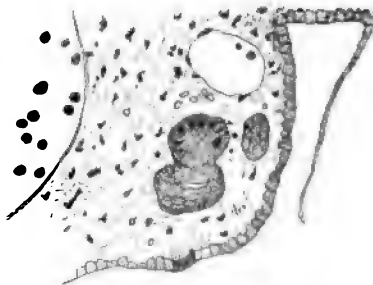


FIG. 52.

"2. In newly-born mammals, but also in adult women, cilia may be found in the rests of the Wolffian body, surely in the epoöphoron.

"3. The special, and perhaps normally the only, area of the primary kidney tubules which possesses cilia is the middle section of the tubules.

"4. The areas of transition of the tubules into the main canal—namely, the outlets of the collecting tubules, as well as

the main tube, the Wolffian duct—are free of cilia, at least in the higher vertebrates, and especially in man (Dohrn, Rieder). The statement of Preuschen that the latter possesses some cilia in the fox is the only diverging view.

"5. That end of a primary kidney tubule which begins at the Malpighian body can be followed in earliest embryonal periods beyond the capsule of Bowman up to its funnel-shaped beginning in the pleuroperitoneal epithelium. These peritoneal or primary kidney funnels, the nephrostoms, the well-known ciliated funnels of fishes, amphibia, and reptiles, are to be found in the embryos of the higher vertebrates and in man, but cilia in their epithelium have not been positively found.

"These observations teach us that cilia are an important element of the epithelium of certain sections of the primary kidney tubules, and we may agree that the large ciliated cysts which so often occur in the region of this organ—i.e., parovarian cystomata—are derivatives of the Wolffian tubules. The scattered occurrence of ciliated cells, which form islands among non-ciliated cells, is known to me in many ovarian cystomata, perhaps such which, like the parovarian cysts, stand in genetic relation to the Wolffian body."

We therefore see that cysts lined with ciliated epithelium may develop from the Wolffian body (ectoderm), and, as we shall later see in drawings taken from our specimens, on the surface of a dermoid prominence cylindrical epithelium often goes directly over into squamous epithelium, and then again into ciliated epithelium, and then into squamous epithelium, etc. In these specimens we will also see glandular structures and cysts lined with squamous epithelium, some with cylindrical epithelium, some with high cylindrical epithelium with many beaker cells, and others lined partly or entirely with ciliated epithelium, so that the fact that all these structures develop from the Wolffian body or from certain displaced ectoderm cells stands in harmony with the facts which Von Recklinghausen mentions.

Von Recklinghausen says further:

"The discussion concerning their origin from the epoöphoron tubules concerns to-day mainly the large ligament cysts, those whose contents may reach one or more quarts. When their size is larger than that of a man's head, can they have developed from such a small organ whose secreting ability is unknown, and even from one ovarian tubule? Fischel believes this to be the case. Kossmann denies it, because such an opinion concerning the cysts does not explain the occurrence of the low, irregular prominences occurring in the wall as numerous elevated folds, which, however, may be explained if these elevations are traced back to the mucous membrane folds of an accessory tube. In addition the parovarium has been

found by Klob on the wall of the ligament cysts, by Fischel in a retrogressive condition, and by Kossmann entirely unchanged.

"I must prove the error of this attempted change of opinion; to this I am led by the results of the examination of a large cyst situated in the lateral part of the ligamentum latum and extirpated without the ovary. This I received from the surgical clinic of Madelung in a fresh and unopened state. Acquainted with conditions obtained in examining adenomyomata and adenocystomata, I found here the desired opportunity to test these facts and to prove the points speaking for the development of the cyst from remains of the Wolffian body. We found partial ciliation in the pigmented wall at the situation of the gland ducts, and likewise pigment bodies in the cyst contents. We were able to find the cylindrical tubular glands lined with cylindrical epithelium, not alone *externally*, but also *within the inner layers of the cyst wall*, and followed one such tube up to its entrance into the cyst space. In this way the typical relation of the cysts which are formed from the Wolffian tubules was disclosed.

"Recently Pilliet described a cyst removed from the ligamentum latum in whose thick wall the ovary was flattened out. It went at one side over into a canal the size of a finger. Since the wall of the latter showed numerous crypts and short branching pear-shaped glands with simple prismatic beaker cells, Pilliet believed it to be a derivative of the organ of Rosenmüller and called the connected canal the dilated duct of Gärtner. Yet this opinion seems to me to be capable of several objections.

"Killian found in one case in the connective-tissue stroma of the cyst wall structures resembling the *intestinal glands of Lieberkühn*, but believes that they develop secondarily from the depressions of the plaited wall, in that their cylindrical epithelium sinks into the connective tissue, while I, on account of their character, must consider them as rests of the frequently-mentioned branches and diverticular lateral extensions of the parovarian tubules. Whether I, with Orth, should think of the paroöphoron instead of epoöphoron tubules, which I distinctly found in the subserous covering of the cysts, will be left undecided.

"According to my theory, whereby the discussed adenomata are considered as derivatives of the Wolffian body, I was compelled to examine the mesosalpinx of my material in its medial portion for the conditions mentioned by Waldeyer and Kobelt. This I did in the specimens taken from the cadaver where the medial part of the mesosalpinx had not been cut off or injured by operation or destroyed through chronic inflammation and adhesion, and also in specimens where the uterus was removed by operation. A positive result was not granted me, nor could I find absolute evidences of Waldeyer's tubules lined with epithelium, or Kobelt's radiations in that part of the ligamentum latum near the thick tubal angle.

Neither did I succeed in finding rests of the Wolffian body, paroöphoron, in the uterus or tube wall of newly-born children, and I recognized that in this point there is unfortunately a weakness in my arguments.

"Even though, in a revision of the literature of adenocystomata of the ovary, I found no descriptions and no statements which make a favorable comparison with the conditions found in our adenomyomata of the uterus, as is the case in the descriptions of testicle cystomata, yet the theory rests on a good foundation that *certain forms of ovarian cysts originate from rests of the Wolffian body enclosed in the hilus of the ovary*. This opinion has been frequently mentioned concerning the ciliated cysts found in the ovary, and an examination of these, in view of the now recognized conditions to be found in adenocystomata of the uterus and tube wall, will soon call forth a decided judgment as to its truth."

We believe the dermoid cysts to originate from cells, ectodermal and mesodermal, displaced by the Wolffian body. We believe further that entodermal elements are not found in these cysts, and that all these intestine-like and ciliated structures are of ectodermal origin and originate in all probability from the Wolffian body. Cystadenomata of the ovary are found to be frequently combined with dermoid cysts. They may be found side by side in the same ovary, or may form a double tumor, or may be united by adhesion and perforation of their walls into one tumor. *In the dermoid prominence* of almost every dermoid cyst, whether a cystadenoma is present or not, we always find those smaller or larger glands or cysts which in every way have absolutely the same structure, cell for cell, as is found in cystadenomata of the ovary. In almost all cases ciliated epithelium is present, either on the surface of the prominence or as the lining of the glandular structures or cysts. Since the dermoid cysts may without doubt be referred to the Wolffian body, it may be granted that when no special ectoderm or mesoderm cells are displaced (which form squamous epithelium, sebaceous glands, hair, bone, cartilage, muscle, glia tissue, etc.) the Wolffian body itself forms a simple cystadenoma of the ovary.

I have found, in sections through that part of an ovarian dermoid (Fig. 53) corresponding to the hilus, the same structures which Von Recklinghausen described and illustrated as glandular elements of his adenomyomata of the uterus. Near them was a large area containing many pigment cells (Fig. 54), near which was found squamous epithelium. Near it was a depression which I have frequently found in the ovarian tissue of

ovarian dermoids, and its epithelium resembles the lining of those glandular structures which I have just called Wolffian body. Some of these structures are lined with simple cylindrical epithelium, others by cylindrical epithelium partly ciliated; in some of these glandular structures are found pigment cells with distinct dark nucleus. The largest gland is lined with stratified epithelium containing at some points pigment. Around them is a layer of small round-celled tissue, and the entire group is embedded in connective tissue. The ovarian tissue in which these structures lie contains numerous large and small vessels, so that there is no doubt that we are here

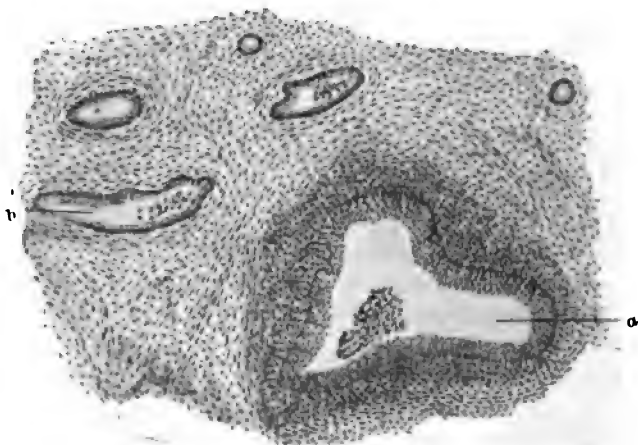


FIG. 53.—This figure shows the above-mentioned tubules of the Wolffian body. Canal *a* contains in part ciliated epithelium. Section through hilus of dermoid ovary.

dealing with the hilus. The entire area resembles the description and the drawings of Von Recklinghausen.

To explain this pigmentation as an *ectodermal product* I quote the following by Von Recklinghausen:

“The characteristic element of the glandular structures in our tumors (uterine adenomyomata), their alpha and omega, is the tubular gland lined with a single layer of cylindrical epithelium (ciliated epithelium), whether the gland forms a regular cylinder or whether it changes its width or shows partial dilatation or projections; whether it is long or short, or whether it takes a straight or a twisting course. The typical accompanying and embedding tissue about the gland tubules is the cytogenic tissue (Kölliker), that loose connective tissue rich in small round and short spindle cells, and so poor in a fibrillary framework; that tissue called by His ‘lymphadenoid’ basal substance, and which we find in mucous membranes that are rich in blood vessels, such as in the uterine mucous membrane.

"The larger the number of the gland tubules in any area, the stronger is the embedding cytogenic connective tissue developed."

In the cysts Von Recklinghausen frequently found "very large, almost round bodies, noticeable because of their yellow color, and also nucleated cells and pigment bodies. The brown contents which are often found in the opened cysts are the result of blood extravasations, at least of a diapedesis with

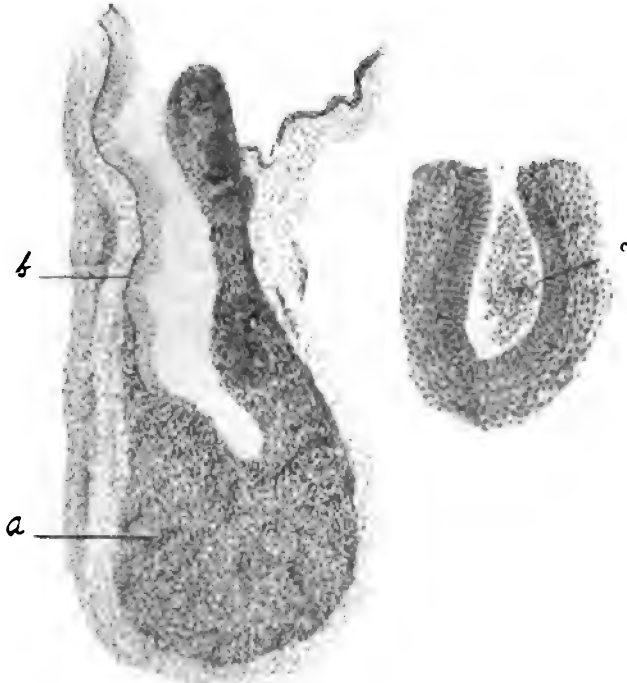


FIG. 54.—a, region with pigmented epithelial cells; b, squamous epithelium; c, a depression lined with the same epithelium as in a, Fig. 53. Section through hilus of dermoid ovary.

following metamorphosis of the red blood cells. For such a hemorrhage speaks also the fact that in the neighborhood of these tubules and cysts filled with brown substance brown pigment cells are found, which may unite with the projections of the interstitial connective-tissue bundles."

That this pigmentation is a peculiarity of the paroöphoron, or "yellow body," may be seen from the following statement:

"Waldeyer mentioned this strong pigmentation in the paradidymis, and found therein a reason for assigning the 'yellow body' in the mesorchium and mesovarium—which,

because of the intensity of its color, was taken for the suprarenal body—to the Wolffian body. Czerny discovered the cause and the situation of this coloring in all these yellow bodies by examination of the fresh specimens microscopically."

The brown, brown-black, and seldom brownish-red color of the contents, as also the pigmented areas of the edematous tissue, are considered by Von Recklinghausen to be a typical criterion of these adenocystomata which originate from the Wolffian body. He found in addition other cells. "They are large, plump, and oval cells, but often polyhedral, like those described by Czerny, and like the pigment bodies in the lumen of the ducts. They lie, as a rule, in long rows so close together that each touches the neighboring cell and *compresses it*." In another like condition Von Recklinghausen describes a group consisting of "fairly large polyhedral cells, partly diffusely stained yellow, which lie *distinctly in mosaic* and also in epithelial order, and only separated from each other by a very small amount of intercellular substance." Since no evidence of gland tubules in these epithelial cell groups was found, he can mention only one gland in which the epithelial gland cells form solid groups, namely, the suprarenal body. In observing the epithelial structure of this yellow nodule in a cyst wall, and in considering those strongly stained areas in the connective tissue of adenomyomata, he was reminded of Marchand's description of accessory or displaced suprarenal bodies, namely, 0.1 millimetre nodules which he found in the closest relation to the vessels of the spermatic plexus in the lateral wall of the ligamentum latum of a first-year baby girl, and mostly between the layers of the ligament in the region of the ovary and the parovarium.

"With the yellow 'granular areas' of the broad ligaments (paroöphoron) may be compared the yellow areas in my tumors," says Von Recklinghausen further, "even though I must grant that the proof of their origin from the Wolffian body (by which Czerny means the glomeruli) has not been found, not even in the late embryonal period."

One more mention as regards the pigment. Von Recklinghausen says:

"Should this, if it really originates from the disappearing glomeruli, not be considered later also *as an evidence of the urniere portion of the Wolffian body*, and should the other, the sexual portion, not be characterized by the absence of pigment? Most authors follow Waldeyer in the statement that the paroöphoron is the rest of the secreting portion of the

Wolffian body, and is found in the medial part of the ligamentum latum, even up to the uterus. When we, then, in tumors of the wall of the female genital canal find *noticeable pigmentation*, and if such pigmentation is considered a special

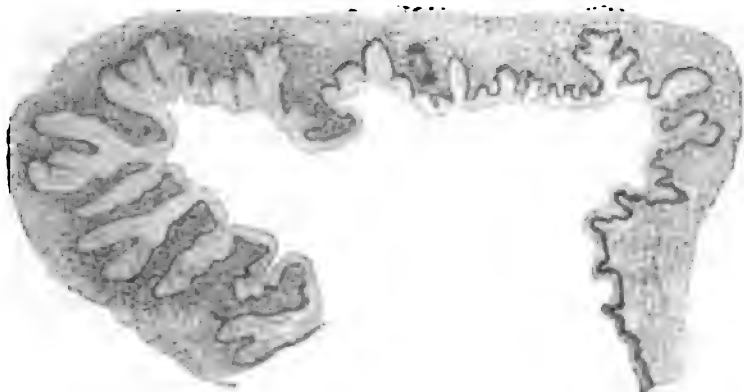


FIG. 55.—From the wall of a cystadenoma of the ovary with "intestine-like" glands.

characteristic of the paroöphoron, the question must be considered if through the presence of pigment we are not furnished with an evidence which characterizes our tumors

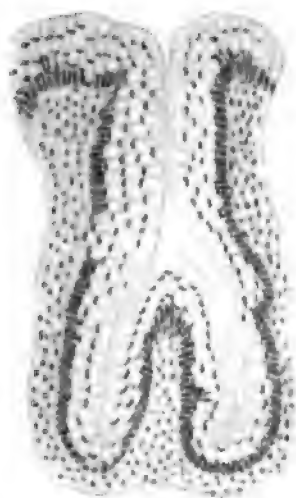


FIG. 56.—A gland from Fig. 55 strongly magnified.

also, and permits us to consider those which are furnished with pigment as originating from the urniere portion of the Wolffian body. Finally, I will mention that in the organ of Rosenmüller, in the parovarium of Kobelt, in the parovarian

tubules, in their walls and in the genuine parovarian cysts, the same pigmentation occurs as we have found so regularly in our uterine tumors (adenomyomata). Either all the remaining remnants of the entire Wolffian body have a tendency to bleeding and to pigmentation, or else the remnants of the 'urniere' portion are specially disposed to these changes and are to be found, as well as in the uterus, also along the tube or in the broad ligament up to the ovary. The paroöphoron does not always confine itself to the medial portion of the internal genitalia, and, on the other hand, the epoöphoron may extend up to this area. At least as regards pathological conditions, we are not compelled to follow the lines of limitation marked off by Waldeyer for the paroöphoron and epoöphoron."

The preceding and following illustrations are given to compare the glandular structures in cystadenomata of the ovary with the same structures in the "dermoid prominence" of ovarian dermoid cysts.



FIG. 57.

FIG. 57.—"Intestine-like" structure from the prominence of a dermoid cyst, on the surface of the prominence.

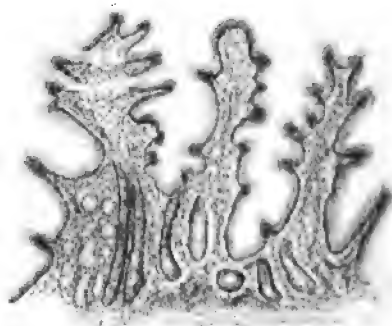


FIG. 58.

FIG. 58.—"Intestine-like" structure from the prominence of another dermoid cyst (at the base of the prominence).

According to Ziegler, Pilliet and Costes explain the teratoid tumors of the testicle through a further development of ovarian tissue which is retained at the hilus of the testicle, or else from rests of the Wolffian body which are not included in the testicle with physiological function.

Von Recklinghausen says:

"It is not alone those cysts of the testicle which are lined with ciliated epithelium which I with Ziegler refer to such rests of the Wolffian tubules; I hope also, through the previous examination and acquired knowledge, to bring clearness into the still indistinct understanding of the origin of adenomata and cystadenomata of the testicle. The statement of Malassez

that they develop in the connective tissue of the testicle is opposed to the older and again recently adopted view of Langhans that the adenomata develop from the seminal tubules of the testicle, although there is a lack of harmony in the fact that seminal threads are absent and that the structure of the new gland tubules is quite different from the normal seminal tubules. The dilated form of the cysts, the connection of gland ducts, cylindrical epithelium in a simple layer (near it stratified squamous epithelium), the presence of cilia, all well-known characteristics of the adenocysts of the female genital canal, are mentioned by Langhans, and his illustrations could be used by me as typical illustrations of the structural conditions seen in our voluminous uterine adenomyomata—I mean the adenomatous portions of the tumor."

That the Wolffian duct and the Wolffian body are capable, through their position in the mesoderm, of displacing with

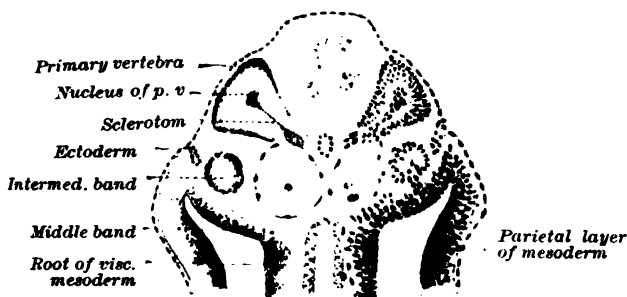


FIG. 59.—Human embryo, end of third week. Transverse section at the level of the arm formation. (Kollmann.)

them not only ectodermal but also mesodermal cells, is not to be doubted, since the duct itself has carried ectodermal cells up to the epithelium of the celom.

Where Kollmann speaks of the development of the Wolffian duct and its close connection with the ectoderm, mentioning the statement of some authors that the same perhaps originates from ectoderm or receives some ectoderm cells for its structure, he adds: "Proof of this contact in mammals has still a further interest: it occurs at the boundary of the middle and posterior third. Under abnormal conditions ectoderm cells might be brought into the region of the germinal glands, become attached there, and cause those dermoid cysts which are so frequently found in the testicle and in the ovary."

Prof. Spee says: "The way in which ectoblast cells may arrive at the region of the celom seems to be explained by the fact that *without doubt ectoblast cells are concerned in the*

formation of the Wolffian body and the germinal glands." So much for the question of the displacement of ectoderm cells up to the celom or into the ovary.

Concerning the displacement of mesoderm I mention the following: In Fig. 59 is seen the "intermediary band" (*Zwischenstrang*) which represents the Wolffian body.

The dorsal portion of the body mesoderm is already changed or segmented to primary vertebræ; the ventral portion of the mesoderm is not segmented, but only divided, so that the celom results. From the primary vertebræ cells pass out to the medullary canal and to the chorda, envelop them, and form the bony vertebræ. These cells form the "sclerotom." From the primary vertebræ comes the so-called "myotom," or

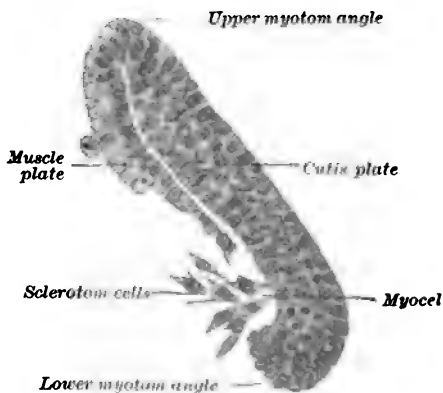


FIG. 60.—Myotom of a human embryo, end of third week. (Kollmann.)

"muscle segment," which later spreads out also into the unsegmented mesoderm.

This myotom (Fig. 60) consists of a medial plate, a muscle plate, and a lateral plate, or cutis plate, and also possesses an upper and a lower angle.

Every "primary vertebra" furnishes:

1. A myotom from which the segmented muscle develops.
2. A sclerotom from which gradually the cartilaginous and finally the bony vertebræ develop.

To show the close connection between primary vertebræ and the medullary canal (ectoderm), I must mention that not only do cells from the primary vertebræ surround the medullary canal and form the vertebræ, but that the primary vertebræ influence a division of the medullary canal, so that each segment of it furnishes a nerve pair.

We may therefore make the following short statement:

The primary segments and the lateral plates are formed from the middle blastodermic layers.

The "primary segments" furnish *striated muscle fibres* and a portion of the mesenchym.

The lateral plates furnish the celom epithelium and the mesenchym tissue.

Certain cells of the germinal epithelium (?) furnish, when removed from their normal position, together with the Wolffian body, cystadenomatous tissue, ciliated epithelium, glands with beaker cells.

Certain cells of the germinal epithelium and the Wolffian body furnish the parovarian remnants of the ligamentum latum.

Mesenchym tissue which spreads everywhere as the interstitial substance between the epithelial elements of the body furnishes *smooth muscle fibres*, mucous tissue, fibrous connective tissue, cartilage, bone, blood vessels (?), blood (?), lymphoid organs, *those tissues which are found in dermoid cysts of the ovary*.

We have seen in Figs. 48 and 59 that the Wolffian duct and the Wolffian body are situated in the mesenchym, and not very close to the "primary segments" which furnish striated muscle fibres, and we therefore may understand why striated muscle is found so very rarely in ovarian dermoids.

Ectoderm furnishes epidermis, hair, nails, the entire central nervous system, and *the spinal ganglia*, and in other situations the epithelium of the eye, the lens, etc.

It is therefore to be seen that smooth and striated muscle fibres originate from quite different centres, so that a metaplasia of one form into the other is not to be considered possible. As a decided support for the possibility of a displacement of cells I quote the following by Switalski:

"During my examination concerning the conditions in the Wolffian tubules in the newly born and in the fetus of the female sex, I found between the folds of the right ligamentum latum of a newly born child a peculiar hair-like structure.

"The systematic microscopic examination of the specimen showed that parallel to the tube, in the upper part of the ligamentum latum, was a structure which I could follow in twenty-nine sections, each 20μ thick. When reconstructed from this series of sections it is seen to be of a long spindle shape. Transverse sections of this structure show it to be round, very regular and macroscopically visible, and of three-

quarters of a millimetre diameter. About in the middle of its length it comes into direct contact with the Wolffian duct, which is lined with well-preserved cylindrical epithelium. At this point is seen on the posterior wall of this structure a slight depression, and the Wolffian duct is at this point somewhat flattened. The Wolffian duct runs a twisting course and separates itself gradually from this structure. Weak magnification shows in the middle of the structure several layers which resemble the cell layers of the epidermis; toward both ends the number of the layers is less. Strong magnification shows that the ends of this structure are formed of large epithelial cells which lie in several layers. The cells are stained blue, have a large, distinct, oval nucleus, and are filled with numerous small bodies. In some cells are seen small accumulations of a brown pigment. Externally the epithelial cells are surrounded by a small margin of connective tissue.

"This layer-like form is more distinct at the middle, and the arrangement is as follows: Externally we have a covering of connective tissue; then follows a layer of cells with distinct nuclei, and intensely stained points, red through eosin; finally we have a layer of cells whose protoplasm is filled with little bodies stained blue through hematoxylin, and in addition brown pigment bodies. The interior of this structure consists of two layers, the external of which is sharply marked off from the last-mentioned cell layer. It consists of red-stained, homogeneous, flattened and concentrically arranged cells, in which the rests of the nuclei are stained red, but more intensely. The internal layer consists of homogeneous, pale-red, concentrically arranged cells. In both layers are accumulations of pigment.

"From the description of the cell layers it follows that we are dealing with a continuous series of various stages of hornification. Even though an absolute identity with the cell layers of the skin cannot be demonstrated, it is still certain, especially when we consider the layer of cells with blue keratohyaline bodies, that there is a decided resemblance to the cells of the stratum granulosum and lucidum of the epidermis. The cells forming the central layers are entirely horny, and, aside from their concentric arrangement, resemble the horny layers of the stratum corneum. The brown accumulations of pigment which are found in the entire structures resemble the pigment found in the skin. There is no doubt, therefore, that this structure is of ectodermal origin, and its presence between the layers of the broad ligament can only be explained embryologically.

"All authors who have studied the embryonal development of the Wolffian ducts in mammals are of the opinion that these ducts, which develop from the mesoderm at an early period, are close to the ectoderm and for a long time are connected with it. This fact has given rise to the theory that the external blastodermic layer is concerned in the formation of the Wolffian duct.

"When we consider this fact, that these structures examined above are at least in close contact, and that a mutual depression of the wall has occurred, the explanation of the presence of this ectodermal structure near the wall of the Wolffian duct is very easy. In all probability, as the Wolffian duct made its way from the ectoderm and as it passed through the mesenchym tissue, some cells of the ectoderm which are in close contact were carried along and so brought between the two layers of the broad ligament. This case can be used to throw light upon the origin of the ectodermal structures which are found between the layers of the ligamentum latum.

"That a dermoid cyst may develop here independent of the ovary is a well-known fact. Peters says: 'The Wolffian duct is at an early period of development in close contact with the ectoderm, and it is possible that elements of the latter are used in its formation and slumber in it for a long time, and then form the point of origin for the dermoids.' As we have

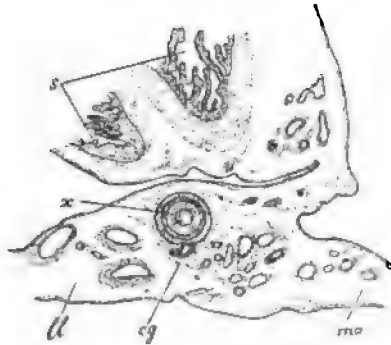


FIG. 61.—Ectodermal structure with the Wolffian duct in a newly born child. *s*, salpinx; *mo*, mesovarium; *ll*, lig. latum; *x*, ectodermal structure; *cg*, Wolffian duct.

seen, we know (?) that the ectoderm is not directly concerned in the development of the Wolffian duct, and that in the wall of the Wolffian duct ectoderm elements are normally not present. *As recent examinations prove, and as our case shows, ectoderm elements may, however, be carried into the ligamentum latum as a result of the intimate contact of the ectoderm with the Wolffian duct.*

"We believe that our case furnishes us with the first evidence of the origin of a dermoid structure, and that its close relationship to the Wolffian duct makes the causal connection between the dermoid structure and the duct beyond doubt."

Fig. 61, by Switalski, shows this ectodermal structure (*x*).

Switalski found in three cases in young fetuses cystic formations in the epoöphoron. In two cases he found two cysts side by side. It seems to him that in the embryonal period there is a tendency to these cystic formations on the part of

the epoöphoron tubules. He says that, since Nagel believes the external layer of the tube to develop from the embryonal tissue of the Wolffian body, it may happen that a Wolffian tubule may be taken up into the tube wall. In one case he found in the wall of the tube, and also in the mesovarium, two epithelial structures which in section resembled an adenoma.

From the above description it may be seen that the Wolffian duct and the Wolffian body are in a position to take with them cell complexes from a fairly large area, as is observed in—

1. Mixed tumors of the kidney, wherein are found smooth muscle fibres, striated muscle fibres, cartilage, fat, mucous tissue, etc.

2. Mixed tumors of the cervix, vagina, bladder, vas deferens, etc., wherein among other elements are found striated muscle and cartilage. As may be seen in Fig. 46, the Wolffian duct lies near the "myotom" from which the striated muscle fibres develop. The Wolffian body (Fig. 48) lies, however, deeper and further away from the myotom. The further the Wolffian duct goes in its course to the cloaca, the further does its lower end become separated from the ectoderm; and since the lower end of the duct alone, and not the Wolffian body, is the cause of the mixed tumors and dermoid cysts of the cervix and vagina, these occur in the latter situation much less frequently than in the ovary. For this reason, also, as we have said, the dermoids of the ovary rarely contain striated muscle fibres, because the Wolffian body is not near the myotom. If, as Wilms and Pfannenstiel state, dermoid cysts of the ovary develop from an ovum cell, we should in all cases find striated muscle. This fact alone is sufficient to prove the fallacy of the so-called "parthenogenesis theory."

3. Mixed tumors of the testicle, described under the names adenocystoma, chondroadenoma, chondrosarcoma, adenomyosarcoma, etc., wherein are found cysts with cubical cylindrical epithelium with or without cilia, as well as stratified ciliated epithelium, mucous tissue, cartilage, and sometimes muscle tissue, fat, and, less frequently, bone.

4. Dermoid cysts situated retroperitoneally behind the kidney, mesenterial dermoids, and dermoids of the omentum. The origin of the latter two forms we have already explained, for the mesenchym of the visceral layer in that region where the Wolffian body appears furnishes the mesoderm of the mesentery and the omentum.

5. Dermoid cysts of the cervix and vagina, between the bladder and the uterus, etc.

6. Dermoid cysts of the ovary and testicle.

That the cell complexes which are displaced are not always of the same extent can be seen from the varying structure of the mixed tumors of the kidney and cervix, and Wilms has given an explanation for the varying structure of these tumors, and for the absence of certain tissues, which harmonizes fully with our own theory.

That the mixed tumors of the cervix and vagina should have a less complex structure than the mixed tumors of the kidney is easily understood when we consider that the former are caused by a displacement of cells on the part of the Wolffian duct alone, for this does not come in contact with so many varying tissue cells of the mesoderm as the Wolffian body does, and when we consider further that its lower end, which finally reaches the future cervix and vagina, does not come in contact with the Wolffian body. Therefore we find in these latter mixed tumors very rarely or not at all cystic formations which show an "entodermal character," for these formations come from the tubules of the Wolffian body. The fact that this end, the further it grows downward, becomes the *more separated from ectoderm*, explains likewise the rare occurrence of dermoid cysts in this lower region.

That this entirely complicated area (Fig. 44, ovary, tube, parovarium, paroöphoron, with their close apposition) should give us complicated and more varying tissues and tumor forms than the Wolffian duct alone is to be expected. To show what complicated tumors may result from the Wolffian body, and likewise because it is of value to our theory, I quote the following case of Marchand. It must be observed that momentarily we make no distinction between cystic and solid dermoids of the ovary. The description concerns an almost solid ovarian tumor of very large size, weighing 5,400 grammes:

"The smooth surface of the tumor resembles the character of an ordinary ovarian cystoma; the character of the pedicle, which contains a number of large turgid blood vessels, as well as the presence of a portion of the well-preserved tube, proves distinctly the origin of this tumor from the ovary. The absence of a large cavity is an unusual occurrence. The length of the tumor is 28 centimetres, the width 20 to 22 centimetres, the thickness 16 centimetres.

"The cut surface of the tumor presents an extraordinary picture; we see a number of large lobules which are separated from each other by radial septa. The individual lobules have mostly a cystic structure; they consist of closely compressed small spaces from which a tenacious, yellow, translucent mucus

comes, *like the usual contents of the small colloid cysts*, and also a thinner, colorless or white mucus. Everywhere are seen yellow areas which are enclosed partly in cysts, and are partly irregularly scattered between the same. By careful inspection fine hairs are seen in these yellow masses, so that there is no doubt that we are dealing with epidermoid structures. In many spots this cystic structure of the tumor is indistinct; the tumor substance takes on more of a medullary character, is of grayish-red color and soft consistence, with numerous fine vessel branches like soft sarcomatous tissue. Here and there are firmer white connective-tissue bands, very white nodules and pieces of the hardness of cartilage, and directly next to them not infrequently are pointed pieces of bone. As may be seen by closer observation and by touch, there are found, mainly in that part of the tumor corresponding to the hilus, large, irregular bone pieces which are closely connected with the larger septa and with the cystic portions.

"On the cut surface there appear further *several teeth*, which have come from small cysts like tooth follicles, and which show a completed and usually irregular white crown and translucent, semi-soft, rounded roots. Such teeth, on closer examination, are found in large numbers *scattered everywhere in varying sizes*.

"From the macroscopical character it is clear that we are dealing with one of those rare mixed tumors of the ovary which resemble the dermoids, but which, as a rule, have a more complicated structure than these.

"In fact, the microscopical examination, so far as made on the fresh specimen, shows the following forms of tissue:

"(a) *Epithelia*.—As a rule they are low, cylindrical epithelia, which in part go over into flat cell forms, and which usually line the small cystic spaces in a single layer. In most of the specimens they appear in such numbers and are so closely grouped that it is difficult to distinguish them from small-celled sarcomatous tissue.

"(b) *Ciliated Epithelium*.—With very narrow, high cells and very distinct cilia; they are often found very close to the other forms.

"(c) *Squamous Epithelium*.—The above-mentioned yellow masses consist mainly of groups of epidermis cells in various stages of change; well-developed polyhedral cells with distinct nucleus; swollen cells with a shining character; finally, many cells without nucleus, whose boundaries form a fine polyhedral network.

"(e) *Well-developed Hair*, with hair follicles and sebaceous glands, is found in large numbers in lamellous pieces which form part of the cyst walls and are either lined with epidermis or with a single layer of cylindrical epithelium. The hairs are very fine, either yellow or pigmented.

"(e) *Connective Tissue*.—Aside from the ordinary connective-tissue bands which form the septa and the groundwork of the tumor, there are found in many areas well-developed

pieces of cartilage, usually of irregular round or angular forms, with hyaline interstitial substance and round or long cells, which at the periphery are closer together and form a sort of fibrillary perichondrium.

"(f) *Myxomatous tissue*, with large, long, spindle and branching cells, and a soft mucous interstitial substance, is present.

"(g) *Sarcomatous tissue*, with closely grouped round cells which are indistinctly separated from each other, and which develop from a growth of the cells of the myxomatous tissue.

"(h) *Fat Tissue*.—This is found everywhere in the tumor, mostly in the connective-tissue bands, or as isolated nodules which macroscopically are with difficulty to be distinguished from the epidermis nodules.

"(i) *Bone*, in larger pieces and in the form of small projections in the connective-tissue bands, where they are like the first projections of bone in the periosteum or in the formation of the cranium.

"(k) *Teeth*.—The crown of the teeth consists of well-developed dentine with canals; on its surface is found a thin layer of enamel.

"(l) *Smooth muscle fibres occur frequently in bundles in the wall of the cysts*.

"The higher animal tissues are also present; there were found:

"(m) *Striated Muscle Fibres*, only scattered, but in the form of well-developed band-like fibres with very clear striation; and, finally.

"(n) *Nerve Fibres*, in the form of a bundle of slightly twisted fibres which are found to be small medullary nerve fibres. The bundle ran transversely through a membrane which was filled with hair, hair follicles, and sebaceous glands, clearly representing a form of cutis. From the larger bundle ran fibres taking an isolated course.

"Subsequent examination showed the following additional elements. In many areas were found small, very black pigment spots, which on microscopical examination proved to be pigment epithelium of the form of the retina pigment. This was found either as a thin layer lining the smaller spaces or else in irregular groups. At any rate, this fact is of great interest, since, so far as I know, this has not been found heretofore in such tumors. In addition there were found in many areas of the tumor well-developed *ganglion cells*, at times very close to the pigment epithelium. The ganglion cells formed groups of various size; the individual cells were of the kind found in the ganglion Gasserii, or in the *spinal or sympathicus ganglia* with capsules. From the ganglia extended fibres, probably nerve fibres. The structure of the cysts proved to be more complicated than at first appeared. Some of them possessed a wall which in its structure resembled entirely *intestinal wall*; there were found broad circular and longitudinal bundles of smooth muscle fibres and distinct glandular depres-

sions of the epithelium, whose cells possess here *the character of beaker cells*. Some of the cysts had a long tubular form, but of a very small diameter (0.5 millimetre). The outer surface of the wall was frequently covered with ciliated epithelium."

On account of its importance I would call attention to the following statement of Marchand:

"It must be observed that this tumor does not seem to develop, like dermoid cysts, *from one section of the ovary*, but presents a diffuse enlargement of the entire organ. It seems as if the various elements developed from a growth of cells *which were scattered throughout the entire organ*. The opinion has been frequently expressed that these tumors represent *mixed forms of the ordinary glandular cystomata with dermoids*, in that the mucous or colloid cysts are identical with the usual cystomata. In this case this does not seem correct, since, as we have seen, the cysts have not the structure of usual ovarian cysts."

Our theory as to the origin of dermoid cysts explains how the various cells may have been scattered in the various parts of the ovary, so that the expression, "It seems as if the various elements developed from a growth of cells which were scattered throughout the entire organ," stands in harmony with our view. Marchand says further: "The explanation of the origin of such tumors meets with certain difficulties. The noticeable fact that these occur almost entirely in the generative glands, especially in the ovary, has caused the opinion that the various tissue forms owe their origin to a form of parthenogenetic development from the germinal cells (ova)."

It may be seen, in reviewing the numerous cases which we have quoted, that similar dermoid cysts, and very complicated ones too, occur in various parts of the body. That in the generative glands, especially in the ovary, such complicated tumors should develop, seems natural after our embryological review, and stands in harmony with our theory, for in the ligamentum latum near the ovary we find all the structures whose complicated embryonal development we have shown in Figs. 35, 44, 48, etc.

Marchand says further: "By others these tumors have been referred to the 'first formation' of the ovary, since in its earliest development it stands in close relation to the three blastodermic layers. It is said that parts of these various layers enter into the ovary and later go on to independent development." This is our view, and will be supported more fully by

our subsequent discussion, which is concerned with the description of nine minutely studied dermoid cysts.

In order to make still clearer the question of mixed tumors, I group together the following, taken partly from Tillmanns :

As regards the tumors of the testicle, pure enchondromata are rare. Mohr has found eleven cases in the literature.

Chondromatous mixed tumors are found somewhat more frequently.

Osteomata result through ossification of a chondroma.

The formation of cartilage and bone has been also observed in adenoma, carcinoma, myoma, cystoma, and sarcoma.

Myomata in pure form are rare; more frequently they occur in mixed tumors as smooth or striated muscle fibres.

Rhabdomyomata have been described by Billroth, Rokitsansky, Senftleben, Neumann, etc.

Myxomata are found as myxosarcoma, myxadenoma, and myxocystoma.

Sarcomata are relatively frequent.

Adenomata occur purely or as mixed tumors.

Adenocystomata occur generally as pure adenomata, at times with areas of cartilage and newly formed muscle fibres.

Cystadenoma mucosum is another form.

Cystadenoma atheromatosum s. epidermoidale (Langhans), with thick contents like that in skin atheromata, is found.

Simple and complicated dermoid cysts or teratomata are rare.

According to Eve, the cysts of the testicle originate, as a rule, from the rudiments of the Wolffian body found in the hilus testis.

The adenomata and cystomata originate generally from the rete testis (*the rete testis develops from the Wolffian body*).

"Almost all the tumors included under the name of 'cystoids, enchondroma, rhabdomyoma, cystosarcoma, and cystocarcinoma,' together with the mixed tumors of the testis, are found on exact examination to contain products of all three blastodermic layers" (Wilms). We shall later discuss the conclusion to which Wilms comes on the basis of this decidedly incorrect statement.

We therefore see that products of the ectoderm occur, as a rule, only in dermoid cysts and teratomata, and to a much less extent in the mixed tumors. No entoderm products can be present. It is clear that just as the mesodermal mixed tumors

show the various mesodermal tissues in varying degrees, so may also the mixed tumors which are built of cells of both ectoderm and mesoderm show these resulting products in varying degrees. If ectodermal cells are displaced to any extent, so that their presence is observed through cutis-like tissue, hair, sebaceous glands, etc., we speak of dermoid cysts. If the displaced cells are, so to speak, located *in one part* of the organ concerned, and if they grow equally, and if the skin cells, as in the normal skin, and the sebaceous glands excrete their products, a cystic dermoid must result. Since the contents found in dermoid cysts are excreted by the so-called "derm" of the cyst, they must lie, when secreted, between the derm and the enveloping tissue of the organ or tissue in which the dermoid grows. The larger the amount of this secretion, the greater is the pressure and depression exerted on the surrounding tissue. If the mass of secreted matter reaches a fair amount, and if it causes in its circumference a tissue growth, and if it compresses the enveloping organ or tissue so that it is stretched and flattened out, we then have a cystic dermoid whose wall consists of so-called "skin," of granulation tissue, and of the tissue of the enveloping organ. The original group of displaced cells is found then only in one part of the so-called cyst wall, and it is this part which grows gradually for years, and in which are formed the hair, the sebaceous glands, and the other elements found on the inner surface of a dermoid cyst. The larger the amount of substance secreted, and the larger the number of products formed by the displaced ectodermal and mesodermal cells, the larger is the cyst.

If, on the other hand, the displaced cells *are not grouped in one part of the organs concerned*, and if, at the same time, the ectoderm cells are not present in too great number, there develops a tumor in which the various tissue forms grow into each other. Since the ectoderm cells do not form in such a case a so-called "derm," and since they cannot through their excretion bring about the formation of a cyst as above described, a tumor form results which is relatively solid and which seems to be of an entirely different structure—a so-called "teratoma."

We understand under teratoma only the tumors originating from displaced cells, and we may therefore divide the so-called "teratoid" growths into the following forms:

1. Mixed tumors.
2. Dermoid cysts.

3. Teratomata. (Solid tumors of complicated structure which, according to many authors, contain products of all three blastodermic layers.)

It is, of course, to be understood that all these forms are only mixed tumors. As said before, the observation of Wilms that so many of the testicular tumors contain products of all three layers is interesting, for it shows that the displacement of the two layers (ectoderm and mesoderm) through the Wolffian body and the Wolffian duct occurs in the testicle as well as in the ovary; in the ovary, however, these tumors occur more frequently in the form of dermoid cysts than in the testicle. This may be explained by the fact that in the female the Wolffian duct and Wolffian body lie at the hilus of the ovary as non-functionating organs, while in the man it forms the *vas deferens* and other functionating tubules.

To make still more positive the statement that cystadenomata of the ovary originate from the Wolffian body and displaced cells, I must repeat the fact that the adenomata and cystomata of the testicle develop mainly from the rete testis, which, as is known, *is formed from the Wolffian body*.

The so-called "mixed tumors" of the ovary may be grouped together in the following form. Of these I name only those which make a comparison with the tumors of the testicle clear.

Enchondroma and osteoma. In the majority of such cases we have, on the one hand, regressive changes—*i.e.*, of fibromata (?)—and, on the other hand, they are probably teratomata (Orthmann).

Cases of ossification of fibromata have been reported by Kleinwächter, Hasse, Loebel, Copeland, Coe, etc.

The formation of cartilage occurs seldom, according to Olshausen: one case is reported by Kiwisch, a second case by Kiwisch—*i.e.*, a fibroid with cartilaginous plates on the external surface—a case of Schröder, a fibroma with numerous islands of cartilage. Bone was also present.

Cystic sarcoma. The larger cysts are, as a rule, accidental combinations with a sarcoma, or they are primary neoplasms to which sarcomatous changes have been added. Then there are found, as in cases by Czerny, scattered areas of sarcoma in the wall (Heinrichs).

Myxofibroma.

Adenomyxocystoma.

Dermoid cysts, very frequent.

Solid dermoids or teratomata, very rare.

If we compare these tumors found in the ovary with those mixed tumors of the testicle, we see that in the testicle mixed tumors are found with a prevalence of the mesoderm products and with a very infrequent presence of ectoderm elements. That enchondromata and osteomata occur frequently in the ovary seems to be overlooked, because these, almost without exception, occur in combination with ectoderm cells—*i.e.*, as dermoid cysts and teratomata. This difference is explained, as I have already remarked, by the statement that the Wolffian duct and the tubules of the Wolffian body (not alone that part of these tubules which opens into the Wolffian duct, but also that part which is connected with the celom) lie as parovarium and paroöphoron at the hilus of the ovary, being regressive structures. On the other hand, the Wolffian duct in the man forms the vas deferens, and a part of the Wolffian body forms the head of the epididymis and the rete testis, and only a small part undergoes regressive changes, and this part has not, like the Wolffian duct, been in close contact with the ectoderm.

In ovarian dermoids and teratomata, ectoderm is present in large amount. Therefore we find here teeth—an occurrence in contrast to the conditions existing in the testicle. Teeth, as we have already shown, are only formed where ectoderm is present on a mesodermal base. In dermoid cysts the teeth are embedded in bone or in the wall of the cyst where no cartilage or bone is to be found; they may also lie in the cyst contents. Their number varies, even one hundred or more having been found in one cyst. The teeth lie, as a rule, on the inner surface of the cyst, and are rarely embedded within the wall—another fact which speaks for their origin as we have explained it, for ectoderm or cutis is found on the inner surface. A further interesting fact is that the teeth, in all cases which I have examined, *are always unilateral*, and, with perhaps one exception, among eleven cases which were examined for me by a skilled observer, *corresponded to that side of the body in which the cysts were found—i.e., in right-sided cysts were found right-sided teeth; in left-sided cysts, teeth of the left side*. The occurrence of teeth in dermoid cysts is not limited to the ovary alone, but, as we have observed, they have been found in dermoid tumors of the hypophysis, of the eye, in mediastinal dermoids, retroperitoneal dermoids, etc. The teeth may be either first or second teeth, and both forms may be found in the same cyst. They may be either molars, bicus-

pids, incisors, etc., and may represent the teeth of the upper or lower jaw.

The dermoid cysts of the ovary do not always take their origin from the ovary. If this is the case, the ovary may be entirely dilated by the tumor which has developed in it, or the ovary may be found only in one part of the cyst wall in cases where the dermoid cysts originated at the hilus and grew into the ligamentum latum. The dermoid cysts may develop in the ligamentum latum, and *the ovary takes no part in the formation of the tumor, but lies absolutely free*, showing, however, as a rule, various changes. This last fact speaks beyond doubt for their origin from structures which have not made their way into the ovary or which were not present in the ovary. The case of Switalski and our own theory make this possibility quite clear. This latter form, whereby the ovary is not affected, occurs more frequently than has been noted in the literature.

That the cells from which the dermoid cysts develop have been carried into the ovary by the Wolffian body finds a further support in the fact that several dermoids may occur in one ovary. Olshausen found in one case a large tumor which proved to be a proliferating cystoma with two dermoid cysts of the size of an egg separated by a considerable space from each other. In another case he found in one tumor three dermoid cysts side by side. Wilms describes a case where in one ovary five dermoid cysts were present.

The occurrence of dermoids in both ovaries is by no means rare; such cases have been frequently described, and it seems that this occurs in cases of dermoid cysts in perhaps twenty per cent of the cases. All these facts speak for some disturbance during embryonal development.

Among the other interesting structures found in dermoid cysts must be mentioned nails (finger nails), of which very fine specimens are to be found in the museum of the Anatomical Institute in Vienna. Olshausen says: "It should not be considered strange if nails belonging to the skin are frequently found in dermoid cysts, just as, in the sheep, wool has been found in dermoids, and in cows, hair, and in birds, feathers in dermoid cysts. The collection in the Gynecological Clinic in Halle contains a specimen of a dermoid cyst of a goose containing very numerous feathers."

The dermoid cysts are frequently combined with proliferating cystomata. As a rule, in addition to a dermoid cyst, a

cystoma is found in the same ovary, but more frequently there are found in the wall of the dermoid cyst smaller or larger formations of the same character as in simple proliferating cystomata. These two forms are to be distinguished from those combinations whereby two separate tumors, the one a dermoid, the other a cystoma, are united through adhesion and perforation of the separating walls. The occurrence of a dermoid in one ovary with the presence of a cystoma in the other ovary is by no means seldom. Olshausen quotes a case of Fleischlen in which in the same ovary a cystoma proliferum, a dermoid cyst, and a sarcomatous degeneration of the connective tissue were present; the walls of the cyst were sarcomatously degenerated. A case of Unverricht showed in the left ovary the characteristic elements of a dermoid, and further red, spongy masses which were included as distinct nodules in connective-tissue capsules; this case presented a round-celled sarcoma. Tumors of the same form were found in the cervix, peritoneum, omentum, liver, and diaphragm. Although the tumors in these latter situations are to be considered metastases, the tumor in the cervix originated probably through the Wolffian duct in the same way as the main tumor in the ovary. That dermoids and teratomata should form metastases and undergo malignant degeneration into carcinoma, etc., is very natural, for they are nothing else than the cells of the patient and may, therefore, pass through the same changes as the normally situated cells of the body.

Olshausen says that the occurrence of teratomata in the ovary does not speak for the theory of parthenogenesis, which we will discuss later. He says: "We must not forget that teratomata occur much more frequently and decidedly in other parts of the body—for instance, in the sacral region, in the scrobiculus cordis, in the hard palate, etc.—where such an explanation (parthenogenesis) is impossible. It is therefore probable that in the formation of teratomata of the ovary we are dealing only with a fetal displacement of cells, so that there is no great *genetic difference between dermoids and teratomata of the ovary.*" He says also that any other explanation for the dermoids of the ovary than is given for dermoids of other parts of the body "makes it necessary to adopt *two entirely different theories as to their origin for seemingly like formations.*"

Since our explanation may be accepted without doubt, we possess a theory which stands in harmony with the various

theories before mentioned in explaining the dermoid cysts and teratomata in other parts of the body—*i.e.*, all originate from a displacement of cells. An important fact which speaks for this event is the occurrence of these tumors in children, which, according to Olshausen, “even very long ago has led to their origin being referred to the period of fetal development. During childhood and up to puberty the dermoid cystomata are the most frequent form of ovarian tumors.”

According to Olshausen, Pigné found, as regards the occurrence of these dermoid tumors in childhood, that in eighteen cases three premature infants and four full-term infants were affected; six times they were found in children under 2 years of age and five times in children under 12 years. “The fact that dermoids may occur at any period of life, together with the anatomical structure of these tumors, which compels a belief in a fetal formation, forces us to believe that dermoids may through decennia have a very slight growth, or may without growth remain very long, or even always, just as they were formed in the fetus” (Olshausen).

That the majority of dermoid cysts are observed during or after puberty is easily understood. The displaced cells are, as I have said, *the cells of the patient*, and possess the same characteristics as all the other cells of the body, and for that reason they evidence their greatest energy, as regards growth, during or after puberty. That they develop more energetically in the ovary may be understood, because they are in a position to grow into the free abdominal cavity without resistance. Their growth is further unhindered because they are not under the influence of the trophic nervous system and the normal resistance of other normally situated tissues, as is the case in those areas where cells develop in their normal situation. I quote the following from Orth because it furnishes in general a support to our view:

“Just these complicated formations (teratomata) have awakened the view that we are dealing with an incompletely developed fetus, an *inclusio fetalis*, whereby it must seem strange that such an inclusion should be so frequently found in the ovary. Some cases might be considered as old ovarian gestations, if it were not that the same neoplasms occur in children and virgins. When we consider the intimate relations in which the developing genitalia stand to the external and middle blastodermic layers, the development of simple and complicated dermoids could well be referred to a *displacement of cells*, the more so since no other explanation is possible for

dermoids in other parts of the body, especially the so-called 'fissural dermoids.' We cannot then, however, understand why such tumors should not occur with the same frequency in the testicle. If we consider the already-mentioned relations to the adenocystomata, which develop directly or indirectly from the germinal epithelium (from the follicle epithelium), we must then come to the question whether or not the dermoids may be considered a product of the germinal epithelium (after Waldeyer). Germinal epithelia are virtual ova cells, and since it is known that in certain animals and also in double-sexed animals a development of non-fecundated ova occurs, a form of parthenogenetic development from ova—i.e., germinal epithelium cells—might be thought of for the very complicated teratomata. It has been stated by various writers that the dermoids develop from a localized region of the ovary, and that the teratomata form a diffuse enlargement of the entire organ, as if the individual elements had developed from a growth of cells scattered throughout the entire organ (Marchand). But since a sharp division of the two forms is not possible, and *since teratoid formations are combined with adenocystomata, so may the cells for both forms of tumor be the same—i.e., the germinal epithelia.* At any rate, this view is only an hypothesis and does not suffice to fully explain the cause, for it must remain strange that such a parthenogenesis occurs *already before puberty*; and besides, it remains to be decided why the germinal cells take on such an abnormal development. I am of the opinion *that already in the earliest development the formation for these neoplasms is laid down.*"

The teeth found in dermoid cysts furnish in all probability a support to our explanation of the origin of these tumors. Olshausen says: "The teeth have, like the teeth in the mouth, a crown sloping toward the median line of the body, so that we can recognize from the teeth of the cysts the side of the body to which the latter belong. The docent in dentistry at Halle, Prof. Holländer, called my attention to this fact and furnished me frequently with proofs of the correctness of this statement." Olshausen put him frequently to the test, and Holländer was always able to say, on examining the teeth, from which side the cyst had been removed. In twelve cysts in which the teeth were examined for me by Dr. Waldberg, D.D.S., Northwestern University, never were *right and left teeth found in the same cyst.* In these cases it was found that the teeth were, in six tumors, of that side from which the tumor was removed. In five cases no history could be found. Waldberg, in determining the teeth, was not aware of the purpose of the examination, and only later did I compare his statement with

the history of the cases. One case, however, containing two right-sided teeth, was removed, according to the history, from the left side. This large hour-glass tumor extended far over to the right side, where a dermoid of the other ovary was also present. Since the smaller portion of this hour-glass cyst was united to the main tumor by only a thin pedicle, I consider it possible that it originated from the right side and later became adherent to the cyst of the left side. The interesting fact, however, is that in all these cysts, among which three contained six or more teeth which could be recognized as right or left, never were right and left teeth present in the same tumor. The report of Waldberg reads as follows:

"I examined in the Clinic Olshausen the teeth of four dermoid cysts in which cases Dr. Bandler determined from the history the side to which these tumors belonged, and his statement and mine corresponded in three cases as regards the side of the mouth to which these teeth would have belonged. In one case, in the Clinic Abel, I found at the end of a bone, covered with skin, eight firmly fixed teeth, evidently united to the above-mentioned bone. They were permanent or second teeth. Six of these, fully developed, were positively normal molars and bicuspid of the left side; the first were molars of the lower jaw, the latter bicuspid of the upper jaw (this cyst, according to the history, was removed from the left side). My examination in the Clinic Chrobak gave the following results: Specimen No. 31 (dermoid cyst containing teeth, bone, and mucous membrane) showed one left upper bicuspid tooth. Specimen No. 30 showed no teeth which could be definitely determined. Specimen No. 110 showed one cuspid or a malformed bicuspid, probably belonging to the right side. Specimen No. 133 (multilocular cyst) showed one left first bicuspid situated in the dividing wall.

"I found the following in the examination of four specimens in the Pathological Institute in Vienna: Specimen No. 2315 showed one left bicuspid; one left upper first molar with an extra 'disto-lingual cusp,' which, according to the theory of Black, is in nearly all cases hereditary; one left lower first and one left lower second bicuspid; eight teeth with noticeable 'mamillons,' in which I was not able to determine the side. Specimen No. 4251 showed the teeth to be very calcified; one first upper right molar very distinct. Specimen No. 2876 showed two upper molars belonging to the right side. One specimen marked 'teratoma ovarii' contained over forty teeth, one bicuspid very clear and several other teeth, all being in my opinion left-sided, without showing, however, absolute criteria.

"In all these cases I found the identified teeth partly free in the tumor or connected with the mucous membrane or the

bone; others I found firmly united to the mucous membrane or the bone. There were present various pathological changes, such as the failure of union of the enamel, carious points, or the absorption of roots. In none of the teeth identified by me did I fail to find one or other of the evidences which are necessary in deciding to which side teeth belong—evidences which were very distinct, as was found by a thorough comparison with the description and drawings found in the 'Dental Anatomy' of Black, my former chief."

Unfortunately I could find in the Clinic Chrobak in only one case a history stating the side of the tumor. No. 133 was removed from the left side. In the Pathological Institute only one specimen was marked as regards the side. No. 2315 was a left sided cyst. Only further investigation can prove whether this fact holds good in all cases. I find it, however, very remarkable that the teeth in all these cysts were always of one side.

(To be continued.)

CORRESPONDENCE.

PELVIC HEMATOCELE OR HEMATOMA PRODUCED BY OTHER CAUSES THAN RUPTURED ECTOPIC GESTATION.

TO THE EDITOR OF THE AMERICAN JOURNAL OF OBSTETRICS, ETC.

SIR.—In the October, 1900, number of your JOURNAL appeared an article by Eugene R. Corson, B.S., M.D., of Savannah, Ga., entitled "A Large Pelvic Extraperitoneal Hematocele Following Dilatation of the Cervix and Curettage," at the conclusion of which the author mentions a similar case in the practice of a friend, and says that he has "seen no mention of any such cause and effect in the literature on the subject."

At the time I read this article I recollected that I had seen three such cases and had reported them somewhere, but where I could not recall; and only within the last few days did I chance to come across the periodical in which they were published—namely, the *American Gynecological and Obstetrical Journal* for May, 1897, under "Correspondence," page 580. I there reported one case of pelvic hematocele (intraperitoneal) in a nullipara; severe exposure to cold on fourth day of menstrual flow; sudden suppression of menstruation; tense, fluctuating mass in Douglas' pouch; no rise of temperature; aspiration showed fluid blood; spontaneous absorption. I had seen this patient two weeks before at my office, where she con-

sulted me for sterility, and there was nothing in Douglas' pouch then.

I also reported two cases of sudden formation of a large extraperitoneal hematoma following curetting for chronic endometritis, one of which was performed in my service at Mount Sinai Hospital by the house surgeon, acting under my orders. This patient was curetted on December 27, 1896, the hematoma appearing two days later on the left side, or at least being first noticed then. The other was curetted outside of the hospital on December 23, 1896, and when admitted on January 6, 1897, presented a large, boggy mass in the pelvic cavity extending half-way down the recto-vaginal septum. In both cases the aspirator revealed dark blood, which was evacuated by a free vaginal incision, fourteen and twelve ounces of fluid and coagulated blood being removed respectively. Both patients recovered, although in the second case an abscess eventually formed on the left side which necessitated an abdominal section. In neither case was there the slightest suspicion or indication of pregnancy, intra- or extrauterine, as shown by bimanual examination before curetting in Case 1, and by celiotomy after evacuation of the blood in Case 2.

I have not the slightest doubt that, with very rare exceptions, an intra- or extraperitoneal effusion of blood into the female pelvic cavity is caused by the intraperitoneal (pelvic hematocele) or extraperitoneal (intraligamentous—pelvic hematoma) rupture of the sac of an ectopic pregnancy. But that such effusions of blood may and occasionally do occur independently of ectopic gestation is shown by Dr. Corson's and my experience.

In my first case, that of hematocele from sudden arrest of the menstrual flow by cold, there may have been a reflux of the blood from the Fallopian tubes or a rupture of a blood vessel near the abdominal end of the tube. In the two cases of hematoma following curetting, it is probable that the uterine wall was perforated and the pampiniform plexus to the side of the uterus injured by the curette. We all know how easy it is to perforate the wall of some uteri with the curette. Possibly, however, the vessel from which the blood escaped was torn by the forcible dilatation preceding the curetting. This is especially plausible if a very powerful dilator or "divulsor" was used, which latter is an instrument I rarely employ for this very reason.

PAUL F. MUNDÉ.

20 WEST FORTY-FIFTH STREET,
February 25, 1901.

TRANSACTIONS OF THE SECTION ON
GYNECOLOGY OF THE COLLEGE OF
PHYSICIANS OF PHILADELPHIA.

Stated Meeting, December 20, 1900.

The President, DR. JOHN B. SHOBER, in the Chair.

DR. GEORGE M. BOYD reported a

A CASE OF CESAREAN SECTION FOR FLAT RACHITIC PELVIS.

Mrs. R. was admitted to the Philadelphia Lying-in-Charity August 28, 1900. The patient's age was 26 years; she was white, born in America of Irish parentage, and has had three children. Her menstrual history was without especial interest. It was normal in type. She had had her last menstrual period December 29, 1899. Her past history was briefly as follows: In 1892 she was first delivered by high forceps operation. This delivery ended disastrously to the child. She was delivered the second time in 1896, and the same high forceps operation was attempted, but it was necessary to terminate the labor by craniotomy. In 1898, in her third labor at term, podalic version was employed, and following this craniotomy was again done.

The examination of the patient on admission to hospital showed that she was well advanced in the last month of gestation. She is less than five feet in height and of rachitic type. She is pigeon-breasted, and there exists the characteristic bowing of the arms and legs.

The study of the pelvis shows a deformity which explains the history of her past labors. It is much contracted, particularly in the measurement of the conjugate. The following measurements were taken: intraspinous measurement, 27 centimetres; intracrestal measurement, 27 centimetres; external conjugate, 18 centimetres; diagonal conjugate, 8 centimetres; true conjugate, 6.75 centimetres.

Abdominal palpation revealed a pendulous abdomen. The child is large, presenting by the cephalic extremity, which is freely movable above the pelvic brim. With the history of three labors ending disastrously to the infant, and the patient exceedingly anxious for a living child, we determined upon delivering by Cesarean section. My colleagues, Dr. W. R. Wilson and Dr. Oliver Hopkinson, concurred with me in the advisability of this course.

An elective celiohysterotomy was performed, because to us it is easier than the celiohysterectomy. Sterilization was ac-

complished by removing a section of each Fallopian tube and ligation of both ends. The uterine incision was made in the long axis of the organ. The infant was easily removed from the uterus, which contracted well upon the placenta still retained. The placenta was now slowly removed. It was normal in size and appearance.

The infant, a male, weight 8 pounds 2 ounces, length 53 centimetres, gave the following measurements of the fetal head: suboccipito-bregmatic, 10 centimetres; occipito-frontal, 11.5 centimetres; occipito-mental, 13.5 centimetres; biparietal, 9.5 centimetres; circumference, 33 centimetres.

Deep and superficial sutures of fine Chinese silk were inserted in the uterus. The abdominal wound was closed with through-and-through silkworm gut. The patient made a nice recovery, and left the hospital one month after admission, the mother and infant doing nicely.

The Cesarean section is performed so frequently to-day, and with such a low mortality, that we may hope, in the interests of the infants, to largely increase its field of usefulness. Already placenta previa and eclampsia have been treated by this method.

It is an easy matter to elect an operation when we have past history to guide us. In the present case three labors ended disastrously to the infant, and the existence of a grave pelvic deformity made the indication absolute. Unfortunately this case represents only one of a small class; the larger classes include primiparae with greatly contracted pelvis and those cases where the indications are only relative. In such cases we meet with difficulties in the study of the pelvis and also in estimating the size of the fetal head and the degree of ossification. It will be necessary in many of these cases to allow the patients to go on to labor, giving them the test of the first stage and possibly applying the forceps, making judicious traction, or possibly performing symphyseotomy and following this with forceps. Failing in this course, then as a last resort, in the interest of the child, perform Cesarean section.

I should like to ask what experience the members of this Section have had with Fritsch's transverse fundal incision. In one Cesarean performed about a year ago, the third on the same subject, because of extensive abdominal adhesions in the lower angle of the wound which followed the second operation, I there did the Fritsch transverse fundal incision. The advantages which are claimed for it are less hemorrhage and the ability to better close the wound in the uterus. In my experience with Cesarean section I have never feared hemorrhage; in fact, it has never even been essential to make compression of the uterine arteries. So that element of danger, in my opinion, is not a great one. In the case in which I made the transverse fundal incision the wound healed just as readily as in the cases in which I have operated by making a longitudinal incision. I would like to ask the experience of the members of

the Section with this transverse fundal incision, also their opinion of the several methods of sterilization. In this case the patient was anxious to be sterilized, so we severed the tube on either side and removed a section, then ligating either end.

DR. W. REYNOLDS WILSON.—Dr. Boyd's reference to the elective treatment in such cases is of great importance. It has occurred to me, however, that the condition of flat rachitic pelvis in a primiparous woman demands a very careful study of the deformity before the elective operation is undertaken. The actual measurements, in my mind, are not so important as the evidences of non-engagement of the head, shown in its motility above the brim and in lateral deviation. Instances of general contraction including a decrease in the conjugate diameter present clearer indications for extreme measures, inasmuch as the flattening of the pelvis is associated with the general reduction of the circumference of the inlet. Synostosis of the sacro-iliac joint existing in obliquely deformed pelvis and in coxalgia, where associated with a rachitic flattening, gives us the most pronounced examples of this class of deformities.

I differ from Dr. Boyd in reference to hemorrhage. I have noticed especially in one instance in my own experience that incision through the uterine wall gave rise to excessive venous hemorrhage as the sinuses of the middle zone of the uterine wall were traversed. In the Porro operation such loss of blood occurring in the original incision might induce a condition of shock which would interfere with the protracted measures incident to the excision of the uterus.

DR. JOHN B. SHOBER.—Dr. Boyd spoke of rendering the woman sterile by ligating the Fallopian tubes. I think we can scarcely be sure of rendering a woman sterile in that way. I believe that a number of cases are reported in which the effort has been made to do so, but the women, after all, became pregnant. Did I understand you to say that you removed the ovaries?

DR. BOYD (in answer to Dr. Shober's question whether he removed the ovaries).—I simply ligated and removed a section of the tube and ligated.

DR. R. P. McREYNOLDS reported two cases:

I. FULMINATING PERITONITIS. II. CARCINOMA OF THE CECUM.

The first case is that of a woman 65 years old. Her family and previous histories are negative.

The present illness commenced six weeks previous to admission to the hospital, with pain and tenderness in the right iliac region, accompanied by general malaise, anorexia, constipation, and loss of weight. These symptoms gradually

increased in intensity, and the attending physician, thinking that she was suffering from appendicitis, sent her to the Presbyterian Hospital for operation. As Dr. Willard was out of the city, she came under my care.

On examination I found an indistinct, indefinable mass in the region of the vermiform appendix; mass could not be felt by rectal or vaginal examination. Her temperature was variable; it would remain between 101° and 102° for a few days, come gradually to normal, and then go up again. During the time that she was under observation the mass increased in size and caused a perceptible bulging in the right lumbar region.

Thinking that it was a perinephritic abscess, I advised an operation. An incision was made over the swelling, two inches to the right of right quadratus lumborum muscle, and a large abscess cavity opened up; this was flushed out and drained.

Two weeks after the operation fecal matter appeared in the discharge from the pus cavity, and it remained until the time of her death, four weeks later.

On postmortem examination we found carcinoma of the cecum, with a perforation, one millimetre in diameter, in the outer wall of the cecum. Around the cecum were the remains of the pus cavity which I had opened. The vermiform appendix was normal.

The second case is that of a woman 35 years old, the mother of six children, the last one born six weeks ago. Her family and previous histories are negative. The convalescence from last confinement was in every way a normal one.

Her present illness commenced about 6 o'clock in the afternoon. She had been feeling very well all day, but, soon after eating her dinner, complained of pain in her stomach and vomited freely. The physician called in, thinking it a case of acute indigestion, ordered divided doses of calomel, but this failed to relieve her, and the pain and vomiting continued. These symptoms continued during the night. The next day her temperature began to rise and pain in the abdomen became more marked; the vomiting, however, ceased and she was able to retain things on her stomach. At 4 o'clock her temperature was 104° , abdomen distended, muscles rigid, and the pain in epigastric region so severe that the consulting surgeon, thinking that she had a ruptured gastric ulcer, advised an immediate operation. She was sent to the Presbyterian Hospital, and, as Dr. Willard was out of the city, she came under my care. I saw her first at 8 P.M.; her temperature was 101° , pulse 120, respiration 40. About one hour previous to this she had had a free bowel movement, which seemed to relieve her somewhat.

On examination I found the abdomen distended, muscles very rigid, pain and tenderness all over the abdomen, but especially marked in the epigastric region. Vaginal examination was negative. As she seemed to be slightly better than

she had been, I advised against immediate operation. At ten P.M. her temperature was $98\frac{1}{4}^{\circ}$, pulse 144, respiration 44.

As it was evident that she was rapidly getting worse, I decided to operate at once. The abdomen was opened by an incision midway between ensiform cartilage and umbilicus. The only pathological lesion noted was a slight congestion of the peritoneum and the presence in the peritoneal cavity of a small amount of bloody serum. I thoroughly irrigated the peritoneal cavity with normal salt solution and sewed up without drainage. She died at 11 P.M., twenty-nine hours from the time that she was first taken sick.

At postmortem examination by coroner's physician, the primary cause of death was found to be acute salpingitis, which caused the fulminating peritonitis from which she died.

In this form of peritonitis the infection is so intense that no time is given for lymph formation; the poison probably enters directly into the blood current and simply overwhelms the person, killing oftentimes in a few hours.

The first case is especially interesting to me, because it shows with what care Nature walled off the infection as it was thrown out. There was a well-defined pus cavity along the cecum, although it had been completely perforated. There was no secondary growth of the cancer. There is also this peculiar little cyst in the liver, which I thought might be of some interest.

In the second case the patient was brought into the Presbyterian Hospital about 7 P.M. in practically a moribund condition, suffering from acute peritonitis. The woman's husband was very anxious to have an operation. An incision was made midway between the ensiform cartilage and umbilicus, thinking there was perhaps rupture of a gastric ulcer. I found the stomach in a normal condition. The vermiform appendix was also normal. I then introduced my hand into the pelvic cavity and felt the uterus and tubes, which, to the feel, seemed normal. The only abnormal thing noticed was a little bloody serum oozing out of the abdominal cavity. Not finding anything to remove, I concluded to sew up the abdominal incision. I irrigated with salt solution and closed the wound without drainage. The woman died a little while afterward.

The case was one of primary salpingitis which caused secondarily a malignant form of peritonitis. In looking over the literature I find that Dr. Kelly speaks of the condition as fulminating peritonitis. In this case the tube became inflamed, the pus leaked out into the peritoneal cavity, and the poison was absorbed and entered directly into the blood vessels. There were no adhesions, no lymph thrown out, and no gross pathological lesion. There was simply a little reddening of the peritoneum, with bloody serum in the peritoneal cavity.

These cases are seen by all gynecologists, and are not reported with the idea of bringing anything new before the Section, but I hoped to hear something in regard to the proper method of

treating such cases, and whether or not they are operative cases at all, and whether with a woman in that condition a surgeon has any right to operate, and, if so, what is the best operation and what is the best form of drainage.

DR. JOHN B. DEEVER.—Both cases are interesting ones. I think the doctor did all that was practicable under the circumstances. It is true that we do meet with these conditions, and very frequently we are not able to identify the pathological lesion that in all instances harmonizes with the gravity of the condition. In this connection I must say that I have frequently operated in cases of appendicitis where there was free pus and the appendix not perforated. I have been struck by the fact, but can explain it by the migration of the micro-organisms, and perhaps in this instance it does not necessarily follow that there was perforation. It is also true, as the doctor says, that the mortality depends largely upon the virulence of the micro-organisms. I believe in a percentage of cases of this character no operation can effect a cure, while, on the other hand, if there is any chance of curing, I think the earlier the interference the better. The question of diagnosis is at times a difficult one.

DR. J. M. BALDY.—I think it is a pity to multiply terms in what is purely a septic condition, and, after all, all cases of septic peritonitis are merely matters of degree. If we multiply the terminology of these conditions it is only confusing.

Regarding diagnosis, I take it that no one can make a diagnosis of sufficient accuracy to say this woman shall be doomed without the chances of opening and seeing. I think it is not only justifiable but demanded that the patient should have the benefit of operation. The case is characteristic. We probably all have seen the bloody serum described, and it brings back to our minds very painfully similar cases. As to what the virulent element is, I think we are in doubt. Clinically they are hopeless cases. They are cases which are beyond accurate diagnosis. Sometimes postmortem examinations show localized conditions which could have been readily relieved, and for that reason operation is demanded.

DR. McREYNOLDS.—Bacteriological examination was not made of the pus in the tubes, which I supposed to be caused by the streptococci. Of the primary cause of the salpingitis I have no idea. I thought perhaps the woman had taken a douche, and that possibly some of the fluid had been injected into the tube and the acute salpingitis set up. I remember that in Dr. Formad's teaching he spoke of such possibility by the use of the straight douche nozzle. There was absolutely no history of tubal disease previous to this attack. The woman had normal health in every way, and was perfectly healthy up to the time of the attack after eating her dinner. For this reason the possibility of rupture of a gastric ulcer was considered.

DR. J. M. BALDY.—I would not like to allow the statement of the possibility of a woman infecting the tubes by a douche to go out without a protest. I do not believe it possible that the Fallopian tubes could be infected in this way. I believe that such a result is purely mythical and the teaching dangerous and absurd. It cannot be done. It is a physical impossibility. I have used the douche direct in both the puerperæ and non-puerperæ for years freely, and have never seen such a result.

DR. McREYNOLDS (closing).—I am sorry that something was not said in regard to drainage. I was much in doubt as to how to drain, and have no idea now how to drain a case of this kind. I had the opportunity of seeing a case of rupture of a gastric ulcer some days ago, and the same incision was made as was made in this case; a glass drainage tube was used, but in my case this would have been inadvisable, owing to the gravitation of the fluid. I would like to know whether it would have been better to drain, or to have flushed out and sewed up as I did without drainage.

DR. J. M. BALDY read a paper entitled

A FEW OBSERVATIONS ON CYSTITIS, WITH PRESENTATION OF
A CYSTOSCOPE.¹

DR. JOHN B. DEEVER.—I can appreciate what Dr. Baldy has said. It has been my pleasure to have owned and practically discarded two Seitze cystoscopes. I was probably one of the first men in Philadelphia to attempt the use of the Seitze cystoscope in the male subject. I have accomplished something with it, but have oftener failed to gain anything. I recall one case in which a shoestring formed the nucleus of a stone in the male bladder which I crushed. The patient was not relieved, because the shoestring was left behind. The fragments of stone were washed out, but the patient continued to have pain at the end of urination. I made a cystoscopic examination and found the shoestring. Through a perineal incision I removed seventeen inches of shoestring. In that instance, as in one or two cases of epithelioma, the cystoscope has been of some value, but in the majority of instances I have had the same experience as Dr. Baldy. I have not had much experience with the cystoscope in the female subject, but to my mind the direct method is a very great improvement over the Seitze instrument. Catheterizing I never have attempted to do with the Seitze instrument.

I also agree with Dr. Baldy as to the relative infrequency of cystitis. I have frequently, as all abdominal surgeons are apt to be, been annoyed with frequent urination after abdominal section. We have had the urine examined by pathologists, and there is no question but that the neurotic element is a very important one. I believe with Dr. Baldy that there are comparatively few cases of cystitis. I think that the cases of cys-

¹ See original article, p. 313.

titis we generally see, particularly in hospitals, are occasioned by the catheter. I should call them catheter-cystitis. I think that in a number of cases, even after bacteriological examinations have been made, we do not find the true elements of cystitis. I think we do have cystitis in the male subject, but we have more cases of posterior urethritis.

I think the subject is an important one and the discussion very timely.

DR. L. RODMAN.—I have very much enjoyed the remarks of Dr. Baldy, which have been very much to the point. I certainly agree with the position which he has taken, and subsequently taken by Dr. Deaver, that the frequency of cystitis in the female has been greatly exaggerated. I believe that a large per cent of these cases are neurotic in origin. The last case of this kind which I saw was a female sent to me for supposed serious cystitis. There were frequent micturitions, as many as ten or fifteen during the night. Examination showed a markedly retroverted uterus, and careful examination of the interior of the bladder at the same time disclosed the fact that the bladder was absolutely normal. There was nothing to do but to treat her uterus, which was done in the gynecological department of the Medico-Chirurgical Hospital.

Furthermore, I am unable to see why cystitis in the female should be frequent. The urethra is short, capacious, and gives the best drainage to the bladder, and is moreover free from the mechanical obstructions which cause cystitis in the male, viz., stricture and enlarged prostate.

I think possibly the best thing that Dr. Baldy said was that the instrument should not be used in the physician's office. The use of the instrument is really an operation and should not be treated as a trivial affair. While I believe much harm may be done by the catheterization of the ureters, much valuable information may also be gained by this operation, and it should therefore be practised by careful hands. I have a case at the present time in which I may catheterize the ureters to determine whether a tubercular pyonephrosis is in the right or left kidney.

Of course the Harris instrument is also of value, and possibly will give practically all the information that catheterization of the ureters will. I have had no experience in the catheterization of the ureters in the male, except after a suprapubic cystotomy, nor have I seen it done. I also believe that Dr. Baldy said a very proper thing in stating that the dilatation in using the instrument was of more value than direct medication to the interior of the bladder. While I approve of direct medication, I believe thoroughly in dilatation under an anesthetic, and believe a great majority of these cases will be cured promptly by it.

DR. JOHN C. DA COSTA.—Some years ago a great teacher was asked why he did not write a book. He said: "What has been once said well does not need repetition." Dr. Baldy has expressed so fully what I feel on the subject of cystitis

that I can say nothing, except to indorse his remarks. I believe more cases have been cured by the dilatation of the urethra than in any other way.

From the attachment of the bladder to the neck of the uterus it is easy to explain the fact of uterine disease being a factor in the production of cystitis. The bladder is in constant motion. Correction of the uterine disease will often cure the supposed cystitis.

In regard to the examination of the bladder, I am fully in accord with what Dr. Baldy has said, that it is hard to get a satisfactory view of the interior of the bladder, and that many of the cases reported of the examination of the male bladder and catheterizing the male ureter exist largely in the imagination of the operator.

DR. McREYNOLDS.—I have enjoyed Dr. Baldy's paper very much, because just at this time I have been doing a little work with the cystoscope and have been endeavoring to perfect my technique. I have not used the cystoscope shown to-night, but if I have an opportunity later I shall try it. It seems to me that if the benefit is derived from the dilatation it would be better carried out by an instrument for this purpose.

DR. BEYEA.—I think every one will agree that a true cystitis is a comparatively rare disease. I would also say that the so-called irritable bladder is not of great frequency. But these two conditions are distinctly separable. I am sure that most gynecologists do have under their care each year a certain number of cases of true cystitis; the number of cases, of course, will depend upon whether the particular gynecologist is able to recognize cystitis when he sees it, his ability in the use of the cystoscope, his success in the treatment of cystitis, and his reputation among the profession and laity as being able to cure cystitis. Again, we must appreciate that a large number of one class of cases come to one physician, while another sees few or none at all of this class. In my experience at the Gyncecan and University Hospitals each year there have been three, sometimes four or five, cases of true cystitis treated. They have all been positive cases of cystitis, characterized by distinct organic change in the bladder wall, which was always easily recognized. The larger number were cases of trigonitis, showing marked inflammatory changes and frequently more or less ulceration. None of the cases I place in this class were or could be cured by simple dilatation of the urethra. There was always a large amount of pus and mucus in the urine, and the urine was ammoniacal. The most distressing clinical symptoms were present in each and every case. I have seen three positive cases of tuberculosis of the bladder. There were positive miliary tubercles and tubercular ulcerations on the bladder wall, and tubercle bacilli, not smegma bacilli, were found in the urine. Every one of these cases I have designated as cystitis were cured only after a prolonged and careful treatment by irrigation, instillation, and direct applications to the inflamed or ulcerated bladder

walls. In four or five this treatment failed, and it became necessary to drain the bladder by making a vesico-vaginal fistula.

I do not include among the cases of cystitis those where there was no organic change in the bladder wall and no pus, but only a little mucus in the urine, as said—the so-called irritable bladder to which Dr. Baldy has referred.

My experience in the catheterization of the ureters has been very limited, and I agree with Dr. Rodman that there are only a very few cases in which catheterization is necessary. There are cases of pyonephritis or tuberculosis of the kidney or its pelvis in which the best diagnostician is in doubt as to which kidney is affected. At least, if he is able to catheterize the ureters in these cases, it removes the question of doubt. It is certainly of great value where nephrectomy is indicated and it is necessary to determine the presence of a functioning kidney on the other side. I expect to see a patient in a few days who has, I think, a uretero-abdominal fistula, which followed a unilateral salpingo-oophorectomy. I did not do the primary operation, but from the symptoms have concluded that there exists a uretero-abdominal fistula. I propose to catheterize the ureter on this side, with the hope that the injury to the ureter is lateral and the catheter will pass in the normal direction. If this can be accomplished, then I shall hope to cure the woman without an abdominal operation.

DR. GEORGE M. BOYD.—I have enjoyed Dr. Baldy's remarks very much, particularly because of the fact that during the past summer I have had under my care a case of nervous, irritable bladder. There was frequent micturition; in spite of that, a urinalysis which showed very little departure from the normal. After carefully studying the case, we found that there existed in the wall of the urethra a small fissure, and the dilatation of that fissure relieved very greatly the symptoms.

I agree fully with Dr. Baldy in his opinion as to the frequency of true cystitis. We must, however, appreciate the susceptibility of the puerperal bladder to infection. So susceptible is it that we feel afraid to perform catheterization. Appreciating this susceptibility, however, I hope we shall not be less careful in catheterizing the bladder, especially during the puerperium.

DR. BALDY (closing).—I agree with Dr. Rodman that in the catheterization of the ureters there is unquestionably a field of usefulness in pyonephrosis and other similar conditions for diagnostic purposes. I think, too, that Dr. Boyd is perfectly right in regard to the puerperal bladder. I teach my nurses that the use of the catheter is one of the most serious operations which they themselves have to do. Unquestionably I believe that the vast majority of cases of true cystitis have been given to the patient by the nurse or by the doctor during the confinement or the lying-in period.

TRANSACTIONS OF THE CHICAGO
GYNECOLOGICAL SOCIETY.

Meeting of January 18, 1901.

The President, REUBEN PETERSON, M.D., in the Chair

FIROMATOUS PREGNANT UTERUS.

DR. HENRY BANGA.—The principal tumor, about the size of a fist and of the subserous variety, had developed, at about the level of the internal os, into the broad ligament, unfolding it, and in a forward direction, pushing the bladder forward toward the pubes. On the body of the uterus itself there were quite a number of smaller subserous fibromata, while others are intramural. The demarkation between the tumor and uterine tissue is well marked. Near the inner os the tumor has grown very closely to the uterine cavity, so that an attempt at enucleation would probably have been followed by the opening up of the uterine cavity. You can see the internal amniotic sac with the beautifully arranged villi, with the fetus in the sac. I obtained the specimen from a woman upon whom I did a laparotomy last Saturday. I first saw her in the beginning of October, at which time she came to me on account of a sharp pain in the left side, which, according to her statement, she had first experienced in April. Besides she complained of indistinct sensations and pains in the abdomen, with gastric disturbances. Menstruation had been irregular. The quantity of the menstrual flow was not much changed; if anything, it was a little more profuse. On examination I found a tumor, and from its position, and because she had not the signs of an intramural tumor, or a tumor tending to advance toward the uterine cavity, I first thought the tumor probably did not cause the pains, so I advised a dietetic treatment, with a view of relieving constipation and flatulency. She came back after three or four weeks and said the pain had increased and it seemed to me that the tumor was larger. I then proposed the removal of the tumor. On the morning set for the operation the patient got scared and she declined to be operated. I did not see her then until six weeks later, when she came saying she was now ready to have any operation performed, since the pains kept on. I will say that she had just menstruated before coming to the hospital the first time. On her second call I made a hurried examination, and, although the tumor itself was larger, I did not consider pregnancy. This I suspected at once upon opening the abdomen, on account of the softness of the uterus. But during the operation I became convinced that the only way to deal with the case

was as I did, to remove the whole organ. I therefore made a supracervical amputation, cutting off the uterus at a level with the inner os, after enucleating the chief fibroma, which had advanced into the broad ligament. It is now a week since the operation. The patient has not had any fever up to this time.

DR. HENROTIN.—How old is the woman?

DR. BANGA.—She is 34 years of age; has been married five years, but was never pregnant before. That was her first conception, which, of course, took place after she had left the hospital the first time.

DR. FERNAND HENROTIN.—This is a very interesting specimen, and it opens up a broad field for discussion, one which is and has been written a good deal about, and it brings before us the very perplexing question of pregnancy associated with fibromata, and also the other question of whether to do a myomectomy or to do a complete operation. It is certainly very perplexing to the surgeon at times, when dealing with a young woman, whether to remove a tumor of this kind or not, and particularly so when pregnancy accompanies the tumor. We read occasionally of the enucleation of reasonably large myomata from the uterus during pregnancy, but I have noticed that we only read of those cases that turn out nicely. It is a grave question to me as to how far we are warranted in proceeding to remove a myomatous tumor or a fibroma from the walls of a pregnant uterus; and the fact that we have an isolated case here and there of recovery reported does not warrant us in interfering in all of these cases, and the thinking observer who has had occasion to operate on these cases knows that these operations are attended with great gravity. Unless there are very strong indications to the contrary, I should feel inclined to do as the doctor did in this case. First, there is the danger before the woman of allowing pregnancy to go on for any length of time; secondly, the abdomen being opened, we are face to face with a condition which is bound to give trouble in the future, and particularly in a young woman, and, unless there are strong indications when the case presents itself that are particularly favorable, I should personally feel inclined, as the doctor did, to perform hysterectomy in tumors of this variety. Of course, these remarks do not apply to pedunculated growths that are easily removed, but growths involving the walls of the uterus itself.

DR. J. CLARENCE WEBSTER read a paper entitled

TWO CASES OF CESAREAN SECTION, AND ONE OF RUPTURE
OF THE UTERUS, IN WHICH ABDOMINAL SECTION WAS
NECESSARY.

CASE I.—Mrs. M., age 29, admitted to the Royal Victoria Hospital, Montreal, February 25, 1899; pregnant, near term. The vagina was markedly contracted as the result of puerperal infection a year previously. In the upper two-thirds of its extent it admitted only one finger. Dilatation was attempted

during several days, by means of rubber bags, without satisfactory results. Cesarean section was therefore decided upon, the operation being carried out before labor pains began. The abdomen was opened by a vertical incision large enough to allow the uterus to be lifted through it. The peritoneal cavity was carefully packed with pads, over which the incision in the parietes was closed with a temporary suture. In this way the peritoneum was protected from contamination with blood and liquor amnii. The uterus was opened by a vertical mesial incision, five inches in length, through the fundus and anterior wall. Bleeding was checked with forceps. The fetus, which lay O. L. A., was rapidly extracted by the breech. It did not breathe, but was very soon restored by artificial respiration. The placenta, which was attached to the posterior wall, was not disturbed, and the uterus, after a little kneading, soon retracted upon it. The uterus was then removed by supravaginal amputation, the ovaries being left. The mother made a normal recovery. The child, a male, has thriven very satisfactorily.

CASE II.—An abstract of this case has already been given in this JOURNAL.¹

CASE III.—Mrs. S., Italian, was admitted to the Presbyterian Hospital, Chicago, at 4 A.M. December 11, 1900. Early in the morning of the previous day labor began, the patient being attended by a midwife. The bag of membranes ruptured at 2 P.M. At 9 P.M. the midwife called two physicians, who diagnosed the case as one of face presentation impacted at the brim. They tried to extract the fetus by forceps and turning. Shortly after midnight another physician was called, who, finding the woman in a critical condition, sent her to the hospital. On her arrival the woman was in a very exhausted state; the radial pulse was very small, its rate being about 130 per minute. A deep tear extended from the perineum through the whole extent of the left part of the vaginal wall, and this was continuous with a laceration which completely divided the cervix and lower uterine segment. No fetus could be felt in the uterus. The abdomen was greatly distended, the uterus being felt as a firm, round mass bulging the lower portion of the abdominal wall anteriorly.

After the administration of a large quantity of saline solution to the patient, abdominal section was performed. The fetus lay in the peritoneal cavity with a quantity of fresh fluid blood. The uterine laceration involved the cervix, the lower uterine segment, and a small part of the upper uterine segment, on the left side. The posterior layer of the left broad ligament was entirely torn away, the rent being continuous with a deep tear which involved the vaginal wall. The fetus and uterus were removed as quickly as possible, the pelvic cavity being packed with gauze, which was carried into the vagina. The abdomen was then closed. The patient was in a critical condition for some hours after the operation. The radial pulse was scarcely per-

¹ See p. 178, February JOURNAL.

ceptible for eight hours. It became stronger during the afternoon, but in the early evening grew weaker, until the woman died, about fifteen hours after operation.

DR. JOSEPH B. DE LEE.—There were two points that occurred to me, during the reading of the paper, that I might make a few remarks about. One was the occurrence of fetal asphyxia during the Cesarean section in the first case reported. In four cases of Cesarean section which I had occasion to perform in the last four years, the fetus in three was apparently asphyxiated. As I did not attempt the resuscitation of the child, being busy with the woman, but turned it over to an assistant, I had to accept his word that the child was asphyxiated. I do not believe, however, that it was a case of asphyxia, for why should the child be asphyxiated? The amount of chloroform which the woman gets up to the time of the extraction of the child is small, because very few minutes are needed to open the abdomen and remove the child from the uterus—ten minutes, at the most, after the complete anesthesia. There is also no compression of the child. As a rule, in Cesarean section there is no prolonged delivery, so that I could not find any reason for the so-called asphyxia. I watched one case as well as I could while attending to the woman, and it struck me that the child had apnea rather than dyspnea. A child that is removed through the uterine cavity is in a different condition from that of a child which goes through the natural process of labor. The natural process of labor is attended with a gradual diminution of the respiratory ability of the placenta. Immediately after the bag of waters has ruptured the placenta is under greater pressure, being squeezed between the uterus and the child; also increased intrauterine pressure, this increase being brought about by the pains and abdominal pressure. In addition, the respiratory ability of the placenta is diminished by the contraction of its surface; it interferes with its circulation. Toward the end of the second stage there is actual diminution and partial separation of the placenta, so that the child becomes to a slight extent asphyxiated, and the respiratory centre takes on an excitable condition, so that external influences—air, for example—will more likely evoke respirations. Such conditions not existing in a child which is extracted rapidly from the uterus, it remains in a state of apnea, and requires, first, to be placed in a condition of dyspnea before the respiratory centre is sufficiently excited. That is my theory for the delayed respiration of Cesarean-section children. I have observed this in three out of four Cesarean sections, and the children have all recovered, and not any one of the three presented afterward symptoms of severe asphyxia, and they were resuscitated by persons who were not particularly skilled in the resuscitation of asphyxiated children. I believe the theory is plausible.

The second point in the reading of the paper is this: In the second case, where, the essayist said, upon the insertion of the

fingers the hemorrhage was so violent that he feared to go any further, the mere introduction of the fingers would not induce hemorrhage, unless the placenta was more or less separated. The blood was undoubtedly old blood which had accumulated in the uterus, and the cause for bringing it out was the introduction of the fingers. This point is not original with me. I remember distinctly that Schröder mentions it in his text book on the treatment of placenta previa. One should not be alarmed at the sudden gush of blood after the insertion of the hand. I can easily appreciate the difficulties of the second case in the sizing up of the indication. To my mind it is one that is hardly discussable on purely theoretical grounds from these benches if we take them one at a time, but we have to take the general aspects of the case and base the indication on them.

Regarding the third case, I made a remark at the last meeting at the time Dr. Davis reported the case, and it was with reference to the time that rupture of the uterus occurred. Dr. Davis stated at that time that the woman had regular labor pains up to the time she was put into the ambulance to be transported to the hospital, and the condition of the woman deteriorated rapidly on her way to the hospital. I mentioned a case which occurred in my practice at the Lying-in Hospital just a few months ago, the case being almost similar, with the difference that the child was in shoulder presentation. The woman was placed in the ambulance in good condition, but the internes said who afterward delivered the woman at the hospital that her pulse was uncountable, and the head nurse declared that the patient was admitted to the hospital in a moribund condition, bleeding freely from the uterus. Version and extraction were performed by one of the attending physicians of the hospital. The uterus and tear were packed, but the woman died fourteen hours later. The practical point raised by these cases is, Should a case of threatened rupture of the uterus be sent to the hospital? There is no doubt but what the hospital provides ideal means of rescuing such a case if the accident occurs there, but to transport a woman—from the Ghetto district, for example, where this case occurred—in an ambulance over miserable pavements and terribly jolty streets is, to my mind, fraught with imminent danger, so that I have instructed the internes of the hospital to make a careful examination of all cases which are referred to the hospital, and in the event of any thinning of the lower uterine segment the patient is to be taken care of at her home; although we operate at a great disadvantage on such cases, still I think the ultimate results will be better.

I have in mind a case of incomplete rupture of the uterus, the position being occipito-posterior, the woman being under the care of a midwife and having developed symptoms of shock. I delivered the fetus and found an incomplete rupture of the uterus. The incomplete rupture was tamponed lightly but completely with gauze, and in carrying the woman from

the table to the bed her condition changed and she subsequently died. At the postmortem, which was held five or ten minutes after death was assured, we found a slit in the thin peritoneum over the packing, letting blood into the peritoneal cavity, and new hemorrhage from a torn vessel, from which the woman died.

DR. GUSTAV KOLISCHER.—I think Dr. De Lee is correct when he says that, as a rule, in cases of Cesarean section we do not find the children asphyxiated, and that it is usually a state of apnea. I want to correct him in this respect—namely, that this is not his theory, but it was advanced fifteen years ago. At that time the elastic ligature was applied around the uterus in all cases of conservative Cesarean section. We do not see cases of asphyxiated children if the blood supply is not compressed. It takes more time to resuscitate a child if we resort to artificial respiration than if the child is let alone. Dr. De Lee stated that when Dr. Webster inserted his fingers he produced a new hemorrhage by touching part of the placenta. I do not think that statement is quite correct. If we remove a blood clot from the cervix we have another hemorrhage, as there is no cavity in which pressure inside of the cavity is as high as blood pressure.

I do not think we should attempt to transport a case of uterine rupture to a hospital in order to operate on the patient, because by so doing we jeopardize the patient's life. A patient ought to be operated upon at her home, although his case proved the contrary.

There is one objection against the so-called drainage in cases of uterine rupture, and it is this: Very often, by trying to pack a uterus which is incompletely ruptured, we may likewise rupture the peritoneum and start a fresh hemorrhage or infect the peritoneum. We often find uterine ruptures in cases of defective presentations, without any special symptoms, and we frequently have symptoms of shock and collapse which do not necessarily indicate rupture of the uterus. The only thing which should be done in such a case as has been presented by Dr. Webster is to make a laparotomy. Nobody would expect to save such a woman by so-called packing or drainage. There are two or three cases of complete rupture of the uterus to be found in literature which were saved by packing or so-called drainage, but most of the cases were incomplete ruptures.

As to what should be done in a private home for a woman who has a rupture of the uterus when the fetus is in the abdomen, as in Dr. Webster's case, if we should insert the hand and arms into the uterus we risk rupturing the organ entirely, and then we have to remove the fetus from the abdominal cavity. As a rule, if we try to do such a thing we are liable to bring a lot of intestines through the rent in the uterus into the vagina, and we do not know whether or not we are going to rupture some of the intestinal loops which may be entangled in one of the fetal parts. I recall one such case in which that was done.

There is one suggestion I would make in regard to the case presented by Dr. Webster, and that is, I would not try to make a typical supravaginal amputation, but would recommend the old-fashioned method of amputation of the uterus by means of elastic pressure, which takes but two or three minutes to do, and the patient is not exposed for any great length of time.

DR. FRANK A. STAHL.—I am very glad to have had the pleasure of hearing Dr. Webster's report of his cases, especially of Cases 2 and 3. These cases were discussed at our last meeting. In that discussion some difference of opinion was evident. There can be some difference of opinion as to the obstetrical judgment only, and this is intended, not in the spirit of controversy, but in that of inquiry along those lines which would suggest themselves as we encounter similar cases; the pleasure of a reply from so well known a teacher will make the discussion the more valuable. Therefore, in justice to Dr. Webster and myself, I would beg leave to repeat to-night my remarks made at the last meeting upon Cases 2 and 3.¹

I was pleased to note that Dr. Webster seems to have corroborated an observation that I made, namely, that so-called child-laborers progress without as much discomfort and expression of pain as is true in cases of maturer primiparæ. Maturer primiparæ are far more inquiringly solicitous and give more expression to their distress; especially is this so in maternities.

So far as pertains to Case 3, the hysterectomy for that ruptured uterus under those conditions of profound shock, does it not seem that here is a case where a well-known axiom in surgery and especially in emergency cases applies—namely, never offend during shock, defend only; avoid major amputations?

DR. JOSEPH B. DE LEE.—What I said with reference to the treatment of rupture of the uterus was in regard to transporting a patient with *threatened rupture* of the organ to a hospital; my idea is that it would be better not to do this, but to deal with the woman at her home, and I have instructed internes to that effect.

DR. FRANK B. EARLE.—It is a well-known fact that if a woman is to give birth to an illegitimate child she is going to cover it up as much as possible, and the instances are numerous where labor has taken place without any of the immediate relatives knowing anything about it. These women will conceal their pains for the purpose of covering their shame, and they will bear pain with greater fortitude than those women who are surrounded by their relatives and friends during labor.

DR. ALBERT GOLDSPOHN.—Inasmuch as no allusion has been made to the suggestion of Fritsch in the technique of Cesarean section, I will make a few remarks. The method seems to be more applicable to the second case of Cesarean section reported, where the child was incarcerated in a directly transverse position, where the uterus was expanded trans-

¹ See p. 233, February JOURNAL.

versely, and the child was not accessible to the fingers through the dilated cervical canal. In such a case, instead of a median antero-posterior incision, a transverse incision in the fundus between the origins of the tubes seems to be more applicable, and the majority of the operators in Germany who have followed Fritsch's technique are decidedly in favor of the modification, with very few exceptions. Some twenty-odd Cesarean sections have been made by that technique, and it has given almost universal satisfaction, and is considered superior to the median antero-posterior incision for the following reasons: 1. The incision is made parallel with the principal blood vessels in the fundus, so that less hemorrhage need occur, and in closing the wound the sutures catch the more important vessels at right angles and better hemostasis is secured with the same sutures that close the uterine wound. 2. Owing largely to the foreign-body effect of the sutures, adhesions sometimes occur between the uterus and the abdominal wall after the usual method of Cesarean section. There are instances in which fistulæ have resulted from the uterus out of the abdominal incision and menstruation has taken place through such fistulæ. But such communications of the uterus with the abdominal wall are not so likely after the transverse incision in the fundus, because the two wounds are not in the same place. Their lines of union are not in apposition. 3. The incision in the abdomen can be made higher up, not so low down, and therefore ventral hernia is less likely to follow. 4. The placental site is less frequently incised. Some other minor advantages are mentioned in connection with this method. The majority of men who have adopted that technique are decidedly in favor of it.

So far as the indications are concerned for the removal of the uterus in cases of uterine rupture, the majority of men who have reported their experiences would bear out the correctness of Dr. Webster's procedure, because it is true, as Dr. Kolischer remarked, that the cases in literature that have been treated by packing have not been complete ruptures, but ruptures only through the muscular coat of the uterus, usually into the broad ligament, but not through the peritoneal coat of the uterus. In these the peritoneum becomes partly separated from the uterus, but the child never enters the peritoneal cavity. The cases are entirely different from those where the child lies actually within the peritoneum.

DR. HENRY P. NEWMAN.—There is one fact which has been well brought out in the discussion and by the paper, and which we sometimes forget—namely, that we cannot determine either in the class-room or in the medical society hall just what procedure is the best in a given case. This is to be decided by the obstetrician at the bedside. I would not take the position that Cesarean section should not be done except the conjugate diameter at the brim be less than a specified number of centimetres. This simply takes into consideration one feature. It does not consider relative disproportions, the

condition of the patient, or her surroundings. I do not favor a Cesarean section, when it is done with premeditation where the arrangements and surroundings are all that one could wish, as anything but a conservative operation compared with the work that is frequently done, for instance, the high use of forceps, great traction, turning under a variety of circumstances, where the liability to sepsis and dangerous consequences is much greater, etc. It ought to be taken out of that position which it has held for ages as an operation of last resort. It is an operation that we know just how to prepare for, what conditions we are going to meet, and how we are going to meet them. It is not like entering the arena with uncertainty, and if the operation is done before the pains begin, before the woman is exhausted or infected, the results should be favorable to both mother and child. It is not wish to be understood as advocating promiscuous Cesarean section, but I do maintain that in this day of aseptic surgery and improved surgical and obstetrical technique should be a recasting of the hard-and-fast rules governing the indications for this operation in former times.

DR. FERNAND HENROTIN.—I do not wish to discuss the indications for Cesarean section, but I wish to introduce some remarks of the essayist regarding the indications for surgical interference in this case.

I would like Dr. Webster to touch on one or two points of the technique of his operation. First, as to the extrusion of the uterus after incising the abdominal wall, as it may be of considerable importance, and it is a point on which there has been a good deal of discussion. I have not had much personal experience in this class of cases, but, considering what little experience I have had, I am inclined to favor extracting the uterus through an incision in the uterus made before the extrusion of the uterus out of the abdominal cavity, as it necessitates only an incision only of moderate length after the uterus is exposed and subsequently we are not so likely to have a much enlarged abdominal wound. Personal experience, pointing to the results in those cases, from the essayist, who has a good deal of experience, would be valuable to us. Second, as to the method of operating in the first case which was reported. I favor making a supravaginal amputation rather than to do the old-style operation. The doctor had good success in this instance, and I would like to have any other surgeon who has had experience in this work tell us whether or not, in making a supravaginal amputation, he covers the uterus over with peritoneum and drops the pedicle, the same as in cases of fibroids. If it can be shown to be successful, it is a great improvement on the old Porro method.

A third point in the case of Dr. Webster is with reference to the technique employed by him. The question is whether it is a proper procedure, after incising and extracting the child, to run a continuous chromic-gut suture through the muscular wall of the uterus, closing the wound entirely, then follow

it up with a simple continuous peritoneal suture. I do not wish Dr. Webster to understand me as criticising his management of the case, because I think he did the proper thing in that instance. But I would like to get his opinion, or the opinion of any one who has had experience in this line of work, whether he considers a continuous chromic-gut suture for the musculature, and a continuous peritoneal suture afterward, sufficient in doing Cesarean section. It is a matter of considerable importance, because it lessens the length of time of the operation, and if experience proves that it is safe—which it was not supposed to be heretofore—it would be of material assistance in dealing with these cases by shortening the time of operation and making our manipulations much less.

DR. WEBSTER (closing the discussion).—I think most men who have had considerable experience in obstetrical work will agree with Dr. De Lee. Of course, in the old days, when the elastic ligature was put around the uterus, the supposition was that asphyxia of the child was the explanation. With the modern method of non-constriction of the uterus, the explanation of apnea must undoubtedly be accepted, the stimulation of the respiratory centres taking a much longer time on account of the delivery of the child through the belly.

I would like to ask Dr. De Lee whether his cases were selected, or whether he was compelled to operate after the woman had been in labor some time.

DR. JOSEPH B. DE LEE.—The first case was a woman who had been in labor twenty-four hours. The labor pains were weak, the bag of waters being intact. The cervix was dilated to admit two fingers, the conjugata vera being between six and seven and a half centimetres. Mother and child recovered.

The second case was a woman who had been in labor some forty-eight hours. It was a case for the relative Cesarean section, but I insisted on doing a craniotomy, because I considered the woman's condition hopeless. A priest insisted on Cesarean section, which was done. The child lived, the woman died.

The third case was a woman upon whom I had done a craniotomy two years previously, but upon whom at that time symphyseotomy was to have been performed. Cesarean section was done during the second pregnancy, just as labor began. The mother and child are both living.

The fourth case was a fibroid or malignant tumor of the ovary (which of the two we do not know), incarcerated and adherent in the pelvis behind the uterus or the rectum. It left a semilunar space, the largest diameter of which was one and one-quarter inches. Labor thirty-six hours. Conservative Cesarean section was done. We could not extirpate the tumor without the uterus, or the uterus without the tumor, nor both on account of the low condition of the woman, so we sewed up as rapidly as possible. The child lived, but the mother died of peritonitis in three days.

DR. WEBSTER (resuming).—The points just brought out by

Dr. De Lee ought to be considered in explaining the condition of the fetus after any given case.

With regard to the question of Dr. De Lee as to the blood that came after examination or after the insertion of the fingers, it would be difficult to decide the exact time of its escape from vessels. Its color was that of fresh blood, but it came after the clots had been removed from the vagina and cervix; but seeing that the uterus was in a state of retraction on the child, which was lying transversely, and noting the condition of placenta previa, it was very difficult to know exactly what was going on. It could not be considered as an ordinary case of placenta previa diagnosed before labor had come on or while labor pains had only commenced in the case of breech or head presentation. It was an abnormal case because of the existence of the complications mentioned.

Dr. Kolischer emphasized the importance of radical measures as against efforts at drainage and packing with gauze in cases of uterine rupture. I saw one case in which rupture had taken place into the broad ligament. The uterus was packed, rupture following into the peritoneal cavity, necessitating abdominal section immediately afterward.

Dr. Stahl read some remarks which he made at a previous meeting of the Society when I was not here. I sent my apologies for not being present. The detention was unavoidable. I hurriedly jotted down a few notes and gave them to Dr. Findley, so that he could present the case to the Society, forgetting that Dr. Findley had not seen the patient. Dr. Stahl opens his remarks by stating that he does not understand yet why this case was Cesareanized, if I may use his own term. My reply to him is this, that if he is unable to understand why I made a Cesarean section in that case it is because I cannot write or express myself in clear English. I have done my best, and I would suggest to him a little further investigation of the statements I have made.

Dr. Newman referred to the matter of dealing with these cases with certain fixed or academic rules. In such a case as the second one it was absolutely impossible to treat the condition according to any academic rule, because of the variety of complications. It is one of the rarest cases on record. I doubt whether there is any one in this room who has seen such a combination of conditions as was present in that case. Any person who is accustomed to do surgical work, by instinct recognizes when it is necessary to have his wits about him and to act for the purpose of saving life. I am perfectly satisfied as to the condition of that patient. If Dr. Stahl cannot understand, it is because my pictorial powers are not sufficiently strong. I am not going to attempt to make him understand, because I think it is absolutely needless. Most people who understand the Queen's English and are accustomed to deal with cases of emergency where surgical indications exist can understand the picture as I have presented it.

I cannot go into the subject of child labors in general, which

was referred to by Dr. Stahl in his remarks, because it has no bearing upon the paper, and I will pass over that phase of the subject.

With regard to the remarks of Dr. Goldspohn I have very little to say. I know that the transverse incision is favored by many obstetricians. I have only seen it made in one case. The mesial incision is attended by very little loss of blood; it takes only a moment for an assistant to catch the bleeding points, and I have not seen any marked hemorrhage from this incision. I do not think the course of the vessels is important, because the natural hemostatic is the contraction and retraction of the uterus, and that applies to all parts of the wall of the uterus, as my sections of postpartum and puerperal uteri show a retracted and contracted condition of the uterine wall is the best hemostatic, and I do not think it makes any difference where the incision is made.

With reference to the placenta, it is interesting to note the case reported by Marcy in which he cut down over the placenta, recognizing that it was on the anterior wall. He squeezed the placenta out, removed the child immediately, and it breathed in a short time. This is a rather different procedure from that which is adopted by most men.

The statements of Dr. Newman are important with reference to the position of Cesarean section. It is very interesting to note that men in different parts of the world are taking up this view. Some are going to extremes. A few years ago in Holland a Dutch worker advocated Cesarean section for all cases of impacted transverse presentations. He was censured by a society of which Traube was president. Within the last few weeks some of you have noticed reports from the East in which Cesarean section is advocated for all cases of placenta previa. Of course this is only a case of taking up a new thing and advocating it unduly, but it is interesting to note the trend of practice. Cesarean section may at the present day be put in a different position from what it occupied formerly. In cases not subjected to prolonged labor or dirty manipulations, in which the time of operation can be chosen and thorough asepsis observed, results are obtained which are infinitely better, from a mortality standpoint, than the results obtained by earlier workers in this field.

Another point must be considered in this connection. It is very remarkable to note the trend of opinion regarding the destruction of the living child. The Roman Catholic Church has taken a strong position against this act, and those of us who are not Roman Catholics have paid very little attention to their scruples. In the Old World, where the indications for embryotomy are much more frequent than here, we know of the fights that obstetricians have had with priests regarding the performance of embryotomy. It is very remarkable to note that many non-Catholics are beginning to question the right of any one to choose between two lives, determining which shall be sacrificed to save the other. The position of Roman Cath-

olies in regard to this matter is perfectly just, regard the standpoint of religion. I think if we adopt their position it will lead us to abandon embryotomy entirely, except in cases where the child is absolutely dead; and if we accept standard as to the relative value of maternal and fetal life must reconsider our attitude regarding the performance of Cesarean section. I think that the indications for the frequent performance of Cesarean section in certain conditions, on account of the perfection of modern technique, can be disregarded.

With regard to Dr. Henrotin's reference to the technique of course there is an objection to lifting out the uterus through a large incision. But then, again, there is an objection to lifting in the uterus. I remember the first case of Cesarean section that I saw done by Sänger in Leipzig in which the uterus was lifted out of the abdomen; a considerable quantity of amnion escaped, with some blood, into the peritoneal cavity. I think it is a case of putting one against the other, and somewhat difficult to decide which is right.

I cannot speak definitely in regard to the percentage of infection, which is perhaps no smaller after the Cesarean operation than after the removal of large tumors.

As to supravaginal amputation *versus* the complete operation, in the first case the complete operation would have been out of the question on account of the continuity of the uterus with the vaginal wall. It was impossible to tell one from the other, as they were blended as the result of old inflammation.

I always drop back the cervical stump in every case of supravaginal amputation, and cover it carefully with peritonium, covering the surface with chromicized-gut suture. I have followed Sänger's method of suturing carried out several times and have always felt that unnecessary time was wasted in employing independent sutures. I have used continuous gut suture for the musculature, because I have found it satisfactory in ordinary myomectomies. It can be applied very rapidly. The forerunner of the gut on the surface was continuous. I do not think it makes much difference what kind of suture we put in, from the point of checking hemorrhage. If one could be certain that the uterus would remain contracted and retracted, I would be afraid to let it drop without any sutures at all after a Cesarean section. My frozen sections of the postpartum pelvis show that the uterine body is normally anemic after labor.

DR. DANIEL H. WILLIAMS read

A REPORT OF TWO CASES OF CESAREAN SECTION UNDER
FAVORABLE INDICATIONS, WITH TERMINATIONS IN RECOVERY.

DR. CHARLES S. BACON.—I do not think there can be any question as to the indications for Cesarean section in either of the cases reported by Dr. Williams, and the only point I think that would lead to any question is as to the irrigation.

¹ See original article, p. 315.

uterus after the operation in the first case. I have considerable doubt concerning the necessity or advisability of that procedure; otherwise the cases hardly admit of much discussion, further than to congratulate the doctor on managing his cases so well.

DR. J. CLARENCE WEBSTER.—I think the report of Dr. Williams' cases is very complete and interesting. There is one point in reference to one case that might come up for discussion, viz., eclampsia. There is a certain school now advocating Cesarean section in cases of eclampsia, and these advocates have been severely criticised. In the first case reported by the essayist other conditions were present which justified the Cesarean section.

DR. JOSEPH B. DE LEE.—Dr. Jaggard died in 1896, and at that time symphyseotomy did not have such a mortality as would justify the position taken by him. The indications for symphyseotomy in the case Dr. Williams reported, however, could have been shut out on other grounds. The pelvis was small for symphyseotomy, and under those circumstances I would second the opinion expressed by Dr. Jaggard that the operation was necessarily fatal.

In regard to Cesarean section in cases of eclampsia, it is a question that is now being brought up in various parts of the world. Only yesterday I had occasion to review the matter in my own mind very carefully. I had a case of eclampsia in a primipara, 26 years of age, in whom twins had been diagnosed and both children were living. The woman had had five severe convulsions and was in the deepest coma. Her pulse, which was 120, had jumped from normal to moderately high tension. The cervix was a little harder than normal. There was no effacement, and the os was dilated sufficiently to admit one finger. But a peculiar condition of the internal os was present: it seemed as if the mucous membrane of the internal os was raised up over the musculature, falciform, in the back of the cervix. It struck me at the time that the quickest way to deliver the woman would be to perform a Cesarean section, removing the twins in that way, but the indications were not sufficiently grounded. We therefore put in a colpeurynter; labor came on promptly, and was terminated within a reasonable length of time for an eclampsia case. The woman began labor at 1 o'clock yesterday afternoon, and terminated it at 7 in the evening. The last convulsion she had at 3 o'clock yesterday afternoon. One child died some time in the afternoon or morning; it was delivered in rigor mortis; the other died between 7 and 7:10 P.M. I listened to the heart tones at 7, and found them irregular, intermittent, and weak as to beat, then the child's heart tones disappeared. The mother is in good condition at the present time. I mention this as a statistic of the indications for Cesarean section in cases of eclampsia. Had we done Cesarean section in the morning, both children and mother might have been saved.

DR. GUSTAV KOLISCHER.—So far as symphyseotomy is con-

cerned, Dr. Williams stated that he did not consider it because the pelvis was contracted and the fetal head too large. Such indications are not sufficient to exclude symphyseotomy when there is a direct way to decide whether this operation is feasible or not. For instance, if we try to express the fetal head into the pelvis, and it is possible to do this, we can perform symphyseotomy. If it is impossible to express the fetal head into the pelvis, symphyseotomy should be excluded.

DR. HENRY P. NEWMAN.—As a rule, the existence of fibroid tumors upon the fundus of the uterus is not an indication for Cesarean section. It seems to have been a fortunate selection in this case, however, inasmuch as, after opening the abdomen, there were found other tumors lower down which might have interfered with the progress of labor. I recall one of my own cases in which a large fibroid upon the fundus uteri was determined in the late months of pregnancy, and in which an operation was considered but thought ill-advised. The patient went on to normal delivery, and an operation for removal of the fibroids was done subsequently with very happy results. While we know that the enucleation of small subperitoneal fibroids or pedunculated growths may be accomplished without disturbing pregnancy, they do not often cause trouble during labor. Therefore it is better not to disturb them until after childbirth. The happy termination in Dr. Williams' case only emphasizes the point brought out in the previous discussion, that you cannot make iron-clad rules for all cases.

DR. WILLIAMS (closing the discussion).—In reply to the remarks of Dr. Bacon regarding the necessity of irrigation, I would say that I feared infection from below, as the patient had not been properly prepared for the operation, and could not be under the circumstances that existed. I thought I did what was best, and think I would proceed in the same manner if I were going to operate on a similar case, that is, thoroughly irrigate the canal below the point of operation. I do not think there is any other way by which we could so well protect this patient against infection from below as by irrigating from above downward and by the application of light tampons of gauze in the vagina.

DR. BACON.—What kind of tube did you use in irrigating?

DR. WILLIAMS.—It was a large glass tube, which I passed from above down through the cervix into the vagina.

DR. BACON.—Was the tube afterward pulled back through the uterus?

DR. WILLIAMS.—No. The tube remained in the vagina, and was placed in such a manner that it drained from above downward.

With reference to the remarks of Dr. Webster in regard to Cesarean section in cases of eclampsia, I have taken some pains within the last week, knowing that I had to read this short paper, to look up the literature of eclampsia with reference to Cesarean section, and I was surprised to find that the operation is being done in various parts of the world for eclamp-

sia. I did not do this operation primarily for the eclampsia. I saw it was impossible to deliver the woman through the vagina, hence I made the operation above the pubis, and happily she recovered. I could not see any other way, at the time, out of such a bad case.

Dr. De Lee spoke with reference to symphyseotomy, and I wish to say that I have had very little experience with that operation. I have had an experience of more than twelve hundred obstetrical cases during the last sixteen years, and I have done but two symphyseotomies; therefore my experience with this operation does not count for much. I have to accept the experience and testimony of others regarding it, but I have never been much impressed with the operation.

Convulsions every fifteen minutes in a patient having a conjugata vera of about two inches and the smallest head diameter of over three inches, with an L. S. A. position and no pains, are sufficient grounds for the exclusion of a symphyseotomy. If the head was engaged or could be engaged, then only could a symphyseotomy be considered. As expression of the fetal head was out of the question in this case, I am not clear how Dr. Kolischer's remarks could apply.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of January 8, 1901.

The President, H. J. BOLDT, M.D., in the Chair.

DR. J. E. JANVRIN showed a

LARGE MYOMATOUS GROWTH OF THE UTERUS

removed from an unmarried cook 40 years of age. She had always menstruated regularly and had never had any local pain or bleeding. One month ago she began to flow very freely. The hemorrhage continued for two weeks, and very slightly for another week. She was sent to the New York Skin and Cancer Hospital. I found she had a large abdominal growth and removed it. It was of large size, and there were strong adhesions to the anterior portion of the rectum and some shreds of adhesion at and above the sigmoid flexure. There were also two cysts: one in the left ovary, containing about an ounce of very bland fluid; the walls were so thin that the cyst was ruptured during the process of removal. The other cyst, in the right ovary, was larger, had stronger walls, and I was able to remove it entire; opening it afterward, it was found to contain some grumous bloody fluid. The patient made a satisfactory convalescence.

The points of interest are: first, the presence of this large mass with the two cystic ovarian tumors; second—a point of

special interest—with this immense growth, which had been going on without the slightest inconvenience to the patient probably for two years or more, there was not the slightest hemorrhage until one month before she was operated upon. Menstruation up to that time had always been perfectly satisfactory.

The mass, when the abdomen was opened, looked like a pregnant uterus, but the facts that she was an unmarried woman, and that one could not possibly introduce the finger up to the cervix on account of the extreme smallness of the vagina, proved that such could not be the case. I was convinced, of course, that it could not be a case of pregnant uterus before deciding upon the hysterectomy.

DR. H. J. BOLDT.—The reason that there was no hemorrhage in this instance is that the tumor may be of the cystic variety, because it feels exceedingly soft and fluctuating.

DR. H. J. BOLDT presented a

SPECIMEN OF TUBAL PREGNANCY.

This specimen shows a tubal pregnancy in the process of abortion. The abdominal extremity is dilated to a diameter of one centimetre. The uterine end of the tube is occluded completely. The tube is two and a half centimetres in diameter at the thickest point.

The woman had been bleeding for three months at irregular intervals, accompanied by cramp-like pains. During the week before operation the bleeding was very profuse, so that her physician, who thought the patient had an intrauterine pregnancy, said that she would abort. Large clots of blood were expelled per vaginam. The patient was very anemic, exsanguinated from the loss of blood, and she suffered severe pain. In the abdomen there was a very large quantity of blood which had escaped at different times, shown by the varying degrees of consistency; some were recent, bleeding still continuing from the tube; the clots varied from a bright red, a dark red, to some which were very firm and yellowish red; the latter were on the floor of the pelvis. The bleeding for such length of time without completion of the abortion is the main interesting feature.

DR. H. N. VINEBERG.—I read a paper on the differential diagnosis of ectopic gestation a few years ago, and one of the speakers present stated that the differentiation was to be made from early abortion, in that there was not so much hemorrhage, the hemorrhage seldom being profuse, in tubal ectopic gestation, while in uterine abortion the hemorrhage was very profuse. This is an exception, and I have witnessed a few such exceptions, showing that you can have as profuse a hemorrhage from the uterus in ectopic gestation as from an intrauterine abortion.

The case also illustrates another point, that in any case of intrauterine abortion it is wise to place the patient under the

influence of an anesthetic to make an examination. In the large proportion of cases the attending physician treats such cases as those of early abortion, perhaps curetting the patients two or three times without an anesthetic. In these cases every man who knows how to make a diagnosis should place the patient under an anesthetic, to detect enlargements which might escape any of us without the relaxation of the abdominal muscles which a narcosis affords.

DR. ABRAM BROTHERS.—Last winter, before the New York Academy of Medicine, I presented a specimen of complete tubal abortion in which the condition of ectopic gestation was confirmed before operation by the late Dr. Skene. The patient was the sister of a physician, and I was very severely criticised by at least one of the older members because he thought that tubal abortions should be left to look out for themselves and did not require any laparotomy or exsection of the tube. There was a difference of opinion among the speakers as to the route for the purpose of exploration, some advocating the abdominal and some the vaginal. As shown by Dr. Boldt's case, in tubal abortion the patient may lose her life from exsanguination, the loss of blood occurring externally or intraperitoneally. Therefore, even if one is able to diagnose tubal abortion, one is justified in doing an abdominal section and removing the diseased tube.

DR. J. E. JANVRIN.—Did not the fetus escape?

DR. H. J. BOLDT.—No; I did not cut the tube open, because Dr. Mall, of Baltimore, is making a collection of embryos, and I wished to keep the specimen intact for him. The fetus is about two months advanced.

DR. JANVRIN.—How long was the hemorrhage going on?

DR. BOLDT.—About two or three weeks without the occurrence of any rupture; this was one of the remarkable points in connection with the case.

DR. JANVRIN.—Did the hemorrhage occur both from the vagina and from the fimbriated extremity of the tube?

DR. BOLDT.—Yes. This was proved by the different conditions of blood found.

DR. JANVRIN.—One of the interesting points is the long continuance of the hemorrhage from the tube. In many cases of tubal pregnancy in which we are called upon to operate, we find there is really a tubal abortion present and no direct rupture of the tube itself. I think it is rare for hemorrhage to continue from a tube for two or three weeks without abortion being complete. That is an interesting point to me in connection with this specimen. I have never seen or read of a case in which the hemorrhage continued for such a length of time. As a rule, abortion through the tube takes place inside of a week, and I believe that is the experience of most men who have seen and operated upon such cases. The hemorrhage may be just as excessive as when the tube itself has ruptured.

In regard to the propriety of operation mentioned by Dr. Brothers, there can be no question whatever of the propriety

of operating in any case in which hemorrhage is going on. It is the hemorrhage and subsequent collapse which necessitate the operation.

DR. H. J. BOLDT then read the paper of the evening, entitled

THE DEFINITION OF SEPTICEMIA (ACUTE BACTEREMIA) AND
PYEMIA (CHRONIC BACTEREMIA).

The best definition for septicemia is given by Coplin under the term "mycoses of the blood." In these the bacteria are present and multiplying in the circulating blood in which their products are generated. The intensity of the septic phenomena is augmented by the greater production of the poison, and, not having even the barrier of protection afforded by the necessity of osmosis or absorption, they are enabled to engender lesions not presumed to occur, at least not to the same extent, in either sapremia or local infection. The embolic production of abscess is the essential element of pyemia, a disease recognized by surgeons as septicemia plus the infected emboli to which are attributed metastatic abscesses.

Septicemia—acute bacteremia—is a blood disease caused by parasitic micro-organisms invading the circulatory system from some primary seat of infection, the infection-producing elements multiplying so rapidly in the blood that the patient usually succumbs within five days after the disease begins. Usually the parasitic germs are streptococci pyogenes; other pyogenic germs may, however, also be present.

Pyemia—chronic bacteremia—is likewise caused by the invasion of the system by streptococci pyogenes, alone or in combination with other pathogenic germs, but they disseminate from an infected thrombus. They are not diffused into the system in one large quantity, neither are they possessed with the same foudroyant virulence from a clinical standpoint. The production of the abscesses found in the condition called pyemia, and upon which the pathologic difference between the two conditions depends, is due to the parasitic organisms finding a resting place outside of the blood circulation and there giving rise to abscess formation.

We know from animal experiments that a small quantity of streptococci injected into the peritoneal cavity of an animal produces little or no disturbance, whereas a repetition of the injection at short intervals will cause death through septic peritonitis. It has been proved that a large quantity of similar pathogenic germs injected at one time will cause a rapid fatal issue. That there is a decided difference in the virulence of streptococci no observer will deny. When sepsis originates from infected thrombi, the infection elements, in his opinion, were diffused to a greater extent through the lymph channels by migration through the vessel walls.

Briefly considering the symptom "chills" in septicemia (acute bacteremia) and in pyemia (chronic bacteremia), met-

rophlebitis may be diagnosed if, in connection with the other symptoms pointing to the uterus as being the seat of pathologic changes, there is an occurrence of repeated chills about a week or more after confinement. Those chills are probably dependent upon a fresh addition of septic micro-organisms into the system. A woman with general septicemia—acute bacteremia—has usually but one chill, or in some instances she may have none. The infection is intense and all at once. There is no repetition of the chill, because the rapidly propagating organisms are already in large quantities in the circulation. It is impossible to distinguish between septicemia and pyemia by a bacteriological examination of the blood or tissues. Therefore the conclusion that the two conditions described as separate diseases by most authors, in most text books bearing upon this subject, are in reality similar diseases, differing in this, so far as the symptoms are concerned, that general septicemia—acute bacteremia—is an illness of short duration, whereas pyemia—chronic bacteremia—is an illness of longer duration. In the former the symptoms begin with intense severity and continue severe until death; in the latter there are exacerbations and remissions.

The term bacteremia is more appropriate from the point of bacteriological science than those usually used, because it at once conveys to the mind the idea that the disease is caused by pathogenic germs. To designate septicemia as "acute bacteremia" and for pyemia the term "chronic bacteremia" is most appropriate. The term septic infection includes all the ailments caused by micro-organisms diffused from some wound surface. He proposed to limit its meaning to local sepsis; then there should be no misunderstanding of what one means when he speaks of the conditions which are to be discussed.

If the definition and the pathologic changes of acute bacteremia are kept in mind, it should be evident that a surgical intervention, like extirpation of the uterus, whether performed per abdomen or per vaginam, or an abdominal section with drainage and either with or without extirpation of the adnexa, must be futile operations. So far as his observations went, it was a common error committed by many writers, when reporting clinical cases, that they include under "puerperal septicemia" (acute bacteremia) patients with local septic infection accompanied by serious constitutional symptoms. This leads to confusion, especially when we see reports with such headlines as "Acute Puerperal Septicemia; Laparotomy; Removal of the Adnexa; Recovery," or "Hysterectomy for Acute Puerperal Septicemia; Recovery." He maintained that such result never had been and never would be achieved by surgical interventions alluded to, on patients suffering with acute bacteremia. For the cure of them he thought we must look to a serum treatment.

DR. BOLDT then read the second portion of his paper, entitled

THE INDICATIONS FOR HYSTERECTOMY, AND THE INDICATIONS FOR ABDOMINAL SECTION AND DRAINAGE, IN PUERPERAL INFECTION.

His decisive assertion made above he had verified by clinical experience. He had performed all the major operations which had been mentioned on a comparatively large number of patients, beginning eighteen years ago with the abdominal section, extirpation of the adnexa, and drainage of the peritoneal cavity. He began the operation of vaginal hysterectomy for puerperal septic infection in 1893. Yet he had not seen a single case of recovery when the operations were done for either acute or chronic bacteremia. In his opinion, the only effect from the operation on such patients was to hasten death. He continued to do these operations for acute bacteremia, thinking he might possibly save a life, because others had maintained that they had been successful; but it was evident that these men had been mistaken in their view as to what acute bacteremia (septicemia) was. He performed the last hysterectomy for acute bacteremia five months ago, and it would remain the last if the condition was recognized by him as such.

Dr. Boldt closed his paper by laying down the following rules for hysterectomy, other less heroic measures being of no avail:

1. If, after a full-term delivery or an abortion, there are no conception products in the uterus, and the patient has fever with exacerbations, chills, a small and frequent pulse (120 to 140 or more); if careful observation should show that the infection comes from the uterus alone; if there is no evidence of peritonitis, the uterus being enlarged and relaxed in its consistence, the parametria free; if streptococci are found in the uterus, and especially if the blood shows the presence of pathogenic germs;

2. If there are decomposition products in the uterus, as in the instances reported by Schultze, Sippel, Prochownik, Stahl, and others, which cannot be removed satisfactorily per vaginam; if on doing a Cesarean section the uterus is found septic, then an abdominal hysterectomy is indicated.

Abdominal section with drainage is indicated in diffuse septic peritonitis when there is no evidence of an exudate in the cul-de-sac of Douglas.

The adnexa are to be left undisturbed, unless there is positive indication to do otherwise.

DR. H. N. VINEBERG.—While Dr. Boldt was reading his paper it occurred to me that the indications he makes for hysterectomy were exactly the same that I have made in my paper on puerperal sepsis. There is one exception, in that I operate by the abdominal route, while Dr. Boldt prefers the vaginal.

I totally disagree with him on the question of definition, and I think it would be a great injury to have the teaching go out from this Society that Dr. Boldt has presented to-night;

I do not believe there is any ground for introducing in the profession such confusing terms as he advocates. There is only one kind of infection—septic infection. What is bacteremia except bacteria in the blood? And yet the cases that Dr. Boldt quoted were cases of bacteria in the blood, and they were operated upon and recovered. Now, where will he make the distinction? It is only by a blood examination that bacteremia can be diagnosed, and we all know how unreliable and unsatisfactory such examinations are. I do not think it wise to speak of any limit of five days. I should like to ask Dr. Boldt if he has not seen fatal cases after six, seven, nine, ten, eleven, twelve days or longer? Now, where is the distinction to be made? Are these cases of acute or chronic septicemia that die from the fifth to the twentieth day? It seems to me that if the profession be given the idea, in general terms, that when the temperature of the woman is above normal there is a condition of septic infection, a condition calling for anxiety, it would lead to a more careful study of the treatment of such cases. In my own practice I occasionally see a case that on the fifth or sixth day has a temperature of 102° or 103°. I scrape the uterus, removing some debris and placental residue, and the temperature promptly subsides. On the other hand, often I am called in to see a case in which the same symptoms developed on the fifth or sixth day, but the patient was allowed to run on without any special treatment until the symptoms became alarming, and probably at the time of my visit I find a moribund patient and a fragmentary, stinking placenta in the uterus. Such a case at the onset is one of sapremia, if you will, or, still better, of putrid intoxication, but on being neglected passes into a condition severe enough to kill a patient. If the profession be taught that every such case from the very onset is one of septic infection, which may pass into acute septicemia or acute bacteremia, or to any other "emia" you theoretically wish to apply, all right and good, and I have no opposition to make. But I do object to the teaching that the death limit of five days will determine whether the case is one of acute septicemia or one of chronic septicemia which need cause no great anxiety to the attending physician. I do not agree with the doctor in reference to what he says about diagnosis. He may be right when he considers it from the standpoint of the bacteriologist, but not from the standpoint of the clinician. At the last congress of the German Gynecological Society these experts admitted that they could not tell what forms of streptococci are virulent and what not. Some are very virulent and others are not. Other forms of bacteria have been attended with fatal results: the bacteria coli communis, the staphylococci, the aerogenes capsulatus have all been attended with fatal results. Yet, according to Dr. Boldt, these cases would not be called cases of septicemia. These patients evidently die from bacteremia, or their products in the blood. What term would he apply to their condition?

DR. W. S. STONE.—I think Dr. Boldt is rendering a great

service to the profession by reading a paper in which he makes the effort, and a very successful one, to pick out and define the different varieties of puerperal infection. That they should not be regarded as one disease and treated in one way is why I disagree with Dr. Vineberg. It seems to me, from my own experience, that the profession at large is too apt to think that there is the one form of sepsis only, and the one thing to do locally is to curette. I am sure that there is a great deal of harm done in curetting cases without a proper understanding of their nature. Cases of sapremia, for instance, with something remaining in the uterus, may very properly be cleaned out, not necessarily curetted, and the patient gets well. In some cases, if curetting is done, Nature's wall of protection, granulation tissue, so well described by Krönig and Menge, may be broken down and thus favor spreading the infection.

DR. ABRAM BROTHERS.—Every effort made toward the differentiating of the different forms of sepsis is an effort in the right direction. Dr. Vineberg is correct in some but not all of his statements. Local septic infection forms the largest variety of cases. The question of treatment depends upon the recognition of the presence or absence of local infection. This infection may not only be due to placental débris present and decomposition of it in the uterus after delivery, but to some condition of local infection occurring previous to delivery.

Apropos of this I wish to relate an instance of a woman who was under the care of a skilful physician who knew the first rules of asepsis. Yet, the waters having ruptured and several examinations having been made by the physician, the woman developed a temperature of 105°, and it was necessary to do an instrumental delivery to remove the child and then to make a manual extraction of the placental tissue. Following this the uterus was cleansed. Still the patient kept on with chills, a high temperature, and within forty-eight hours Dr. Boldt was called in consultation for the purpose of considering the advisability of removing the uterus. The condition was a local one beginning at a time previous to delivery. There was no trace of any placenta in the uterus, and we felt that removal of the uterus was desirable. Unfortunately the patient's condition was bad, and Dr. Boldt preferred to curette the uterus. The case was certainly one of local infection at the beginning. The woman died a few weeks later as the result of an ulcerative endocarditis. There was in my mind no question but that we were dealing with a local infection which preceded the advent of labor, and there is no question in my mind either that the proper thing to have done was to have removed the uterus a short time after, if not before, delivery. If we can recognize the conditions, we will know just what to do, whether to employ therapeutic measures, to employ curettage, to extract the placenta, or other steps.

I agree perfectly with Dr. Boldt, and I think Dr. Vineberg agrees too, that if we can make a diagnosis of acute bacteremia, hysterectomy or other form of local treatment is contra-

indicated. The bacteria are in the blood, and all the hysterectomies in the world could not save such a woman, but could only hasten her death. Under these circumstances I believe it would not be wrong to recognize such terms, and I think this Society should place itself on record as indorsing these terms, local septic infection, acute bacteremia, and chronic bacteremia.

DR. W. E. PORTER.—I am entirely in accord with the views of Dr. Boldt upon the subject of bacteremia, but I do not agree with him in regard to the method employed for relief of local septic infection, *i.e.*, hysterectomy. A great many cases can be avoided if persistent intrauterine irrigations be carried out. I had the misfortune to come in contact with many such cases at Bellevue Hospital; these cases were brought in by the ambulance, and such excellent results were obtained by hourly irrigations, and so many cases cured, that I believe that under any other method the cases would have gone on to a fatal issue. I am strongly in favor of a trial of this procedure before resorting to hysterectomy. Where placental tissue remains I prefer removing that tissue by means of the placental forceps rather than by curetting; following the use of the placental forceps, hourly irrigations, later at two- or three-hour intervals, may enable us to avoid hysterectomy. I am rather sceptical of the results obtained in cases where hysterectomy is finally resorted to.

DR. G. L. BRODHEAD.—I should like to refer to one point in regard to abdominal hysterectomy for retained placenta. It seems to me that if the uterus simply contains retained placenta, unless a septic endometritis complicates the retention, abdominal hysterectomy would not be indicated. If sufficient space in which to operate cannot be gained by dilatation of the cervix, then the cervix should be incised; but we should not resort to abdominal hysterectomy for cases of that nature.

I should like to ask Dr. Porter whether he introduced the douche tube for each irrigation or whether it was left *in situ*.

DR. W. E. PORTER.—I am glad that Dr. Brodhead has brought up that point. I have frequently been called to see cases where intrauterine irrigations have been attempted with the Chamberlain tube, and, after bimanual manipulation, a large amount of foul material came out. The method that I have used for several years, and the one that I followed at Bellevue Hospital, is to use a flexible catheter, which should be passed through a cervical drainage tube, such as I described in a paper read before this Society. This tube is fastened with silkworm gut to the cervix, and through it is passed a flexible catheter up to the fundus of the uterus, rubber tubing being attached to the catheter. The nozzle of the irrigating apparatus can then be inserted in the free end of the rubber tube at the vulva without disturbing the patient.

DR. J. E. JANVRIN.—When I have had cases of septic infection of the kind under discussion, I have treated them identically as Dr. Porter has related, washing out the uterus

continuously, day and night. Of course, in cases where there is retained placenta the point is to remove it as quickly as possible and with the least possible manipulation. I should object to incising the cervix, as Dr. Brodhead has remarked, in any case of septic infection of the uterus. I should prefer to dilate slowly and carefully, if dilatation is needed. In incising the cervix I should fear subsequent trouble; the glands at either side of the cervix would be very apt to take up some poison brought down when cleaning out the uterine cavity. I have never removed a uterus for acute septic infection, so far as I know, although I have been asked to do so.

I have listened to the reading of the paper and the discussion with much interest, and I should like very much to have Dr. Boldt, in his closing remarks, give us some well-defined, straightforward lines of differentiation as to the cases in which hysterectomy should be performed and in which it is useless; I mean symptoms not only clinical, but pathological, and particularly those pertaining to the pathology of the cases. In what way would he differentiate between those cases in which he would perform a vaginal hysterectomy in one case, an abdominal hysterectomy in another, and in still another abstain from either form of hysterectomy?

DR. J. LEE MORRILL.—I should like to ask if, in cases of retained placenta, the cervix is not easily dilated, or nearly always found patulous. The finger, I believe, can be readily entered.

DR. H. N. VINEBERG.—If permitted, I should like to add a few words to my discussion, in justice to myself. I wish to say that, in my experience, it is the rarest thing to find cases in which hysterectomy is indicated. During the past year, although I have seen a goodly number of cases of puerperal sepsis, I did not come across one in which I considered hysterectomy indicated. In my paper I made the assertion that it should be resorted to only after everything else had been tried. Hysterectomy is *not* indicated until other measures of relief have failed.

I am opposed to cutting the cervix, not only for the reasons given, but also because these uteri are very friable and are liable to tear into the broad ligament. Those cases in which the placental tissue is within the uterus, and where the finger cannot be introduced into that organ, and where it is impossible to dilate the uterus, are the ones in which I curette. Such a case I have exhibited was one which I curetted myself the first time, but when seen the second time hysterectomy had been done at once in order to save the patient's life. In that case, in spite of the fact that the placental tissue was present and was firmly organized, there was no hemorrhage and no fetid discharge. There was no doubt but that there was a septic endometritis at the same time.

DR. RALPH WALDO.—We are very much indebted to Dr. Boldt for the work he has done in this line. The term septic infection is a generic one; septicemia has been applied to

almost everything. If we could differentiate between the different kinds of infections it would help us very much in giving a prognosis and outlining a plan of treatment. If the infection is a local one local treatment is indicated. You may be called upon to remove a placenta, or a portion of it, that is retained. But if there is an involvement of the walls of the uterus, as an abscess or a marked septic metritis, then you may be called upon to remove the entire uterus; yet the condition is not in the general circulation. When there is general septicemia, as Dr. Boldt describes it, local treatment will be of little benefit.

In regard to the intrauterine douche, I was on the house staff of the New York Maternity Hospital during two epidemics of puerperal sepsis; during the first we cleaned out the uterus, washing and irrigating it continuously. I think one of the most generally used catheters, and the worst instrument for washing-out purposes, is the Chamberlain glass tube as constructed; it is a very mean thing to use for washing out the uterus effectively. During the second epidemic the uterus was thoroughly cleaned out and then let alone. All I have to say in regard to it is that I most heartily condemn the repeated and continuous irrigation of the uterus in any septic case. After cleaning out the septic material let the surface granulate.

DR. H. J. BOLDT.—I thank all for the critical attention given to the paper.

Dr. Vineberg disagrees with me as much as ever, and the trouble here is that, from the ideas expressed by him, it simply shows that he does *not* understand the old term septicemia or what it really means. Dr. Vineberg calls local infection "septicemia." Such is not the case. The best definition of all those quoted I believe to be the one given by Coplin under the term "mycoses of the blood," page 389. It reads as follows:

"In these the bacteria are present and multiplying in the circulating blood in which their products are generated. The intensity of the septic phenomena is augmented by the greater production of the poison, and, not having the barrier of production afforded by the necessity of osmosis or absorption, they are enabled to engender lesions not presumed to occur, at least not to the same extent, in either sapremia or local infection. The embolic production of abscess is the essential element of pyemia, a disease recognized by surgeons as septicemia plus the infected emboli to which are attributed metastatic abscesses."

We must recognize the fact that puerperal fever is always, in a degree, a septic infection. Cases have been reported time and time again as "septicemia cured." Now, we must bear in mind that in septicemia we have the parasitic organisms thrown into the blood circulation and that they multiply there very rapidly; so it stands to reason that we are dealing with a disease that is incurable by any surgical intervention. The term septic infection should be limited to something all

can understand. The terms that I have offered are simply propositional on my part, and tell us whether we are referring to a local or a general infection. I use the term acute bacteremia to differentiate from chronic bacteremia. Bacteremia itself means a "disease of the blood which is caused by parasites." I say "acute bacteremia," because there the parasites multiply rapidly and the disease has a short course. There is no difference between chronic bacteremia and pyemia. In pyemia the elements from an infected thrombus are gradually thrown into the system, and is to be differentiated pathologically by the presence of metastases occurring throughout the body, in the joints, in the lungs, in the heart, etc., as mentioned by Dr. Brothers. I have attempted to give a clear understanding of what is meant by the terms "local septicemia," "chronic bacteremia," "pyemia," etc., which are now so frequently used synonymously.

DR. H. N. VINEBERG.—Can you tell at the bedside when one runs into the other?

DR. BOLDT.—No. Fetid discharge has been referred to tonight. If fetid discharges come from the vagina it does not necessarily mean that the case is serious. Patients with acute bacteremia may have no fetid discharge, and yet there may be an intense septic endometritis.

Dr. Porter has spoken of irrigation of the uterus. I did not include that form of treatment in my paper, only limiting myself to the indications for doing radical operations, and I wish to be understood that I do not believe it is justifiable to perform the major operations until all other resources are evidently useless.

Dr. Vineberg mentions a case having bacteria in the blood; that is bacteremia. I think it has been laid down in the work by Krönig and others that even if we do find a few microorganisms in the blood it does not mean positively that the patient has septicemia.

These infectious elements, these parasites, are constantly multiplying in the blood, and the progress of individual cases is so rapid and the general condition of the patient is such that an unfortunate issue is evident; *this* condition is laid down by most authorities as one of true septicemia, or acute bacteremia. We have in pyemia—chronic bacteremia—the same class of elements thrown into the system constantly, but they are not so virulent, and are not thrown into the blood in such quantities, and have more time to act upon the tissues of the body, and they form metastatic abscesses. So far as determining the exact quantity in the blood, that is impossible. We do know that patients with local septic infection may have just as severe symptoms. A patient with a retained placenta may have as severe symptoms as one who has the "fulminating" form of septicemia, as described by Foster in his encyclopedic dictionary. If we watch these patients for two or three days, treating the symptoms, they frequently get well rapidly. There may be other causative factors which

give rise to a rapid elevation of temperature and a rapid pulse rate. When these patients are watched for two or three days and kept absolutely quiet, we frequently find that their condition gets better even without any intervention, retained decidua or placenta being expelled spontaneously. Therefore it is necessary for us to observe such patients before we resort to any form of radical or serious treatment. I did not dwell upon curetting, etc., in my paper. One of the gentlemen present mentioned an instance where he curetted two or three days after confinement and found small particles of placental tissue; if curetting is done under such circumstances I would coincide with others who say that the patient did not get well because of the intervention.

To be more definite regarding the indications for major operations of the kind that we have spoken of, I can only say that after we have been able to watch the patient for a number of days, for a week or ten days or two weeks, and we find that all treatment that has been instituted has failed and that the patient is gradually getting worse, that the patient has chills and no other part of the body is giving rise to such constitutional symptoms with exacerbations and remissions, where the parametria are free and there is no peritonitis, and the secretions in the uterus show the presence of streptococci, and if, perhaps, we find in the blood streptococci, as reported by Prochownik—I say that under these conditions we are justified in considering vaginal hysterectomy. Abdominal hysterectomy should be considered only in that class of cases where we do a Cesarean section on a septic uterus, or where undoubtedly there is intense septic intoxication associated with a septic endometritis, the patient's condition not improving under other treatment. One reason why the placenta could not be removed in the case reported by Schultze was on account of there being a uterus bicornis. In the other case quoted from Sippel, where the placenta had been removed, the general condition of the patient was such that it was inadvisable to manipulate further in the uterus, so great was the danger of perforation, and hence it was deemed advisable to perform hysterectomy. It will require a great deal of judgment in deciding which cases should be operated upon and which not to operate upon. I am in doubt, just as much as some are who are here, as to exactitude in making the indication when to operate and when not to. We can only take all facts into consideration and form an opinion based upon former experience.

What I have given to-night is simply the beginning of further work in this direction. I maintain that we should all endeavor to make some definite definition of the diseases that we deal with.

TRANSACTIONS OF THE WOMAN'S HOSPITAL SOCIETY.

Meeting of January 22, 1901.

J. DOUGAL BISSELL, M.D., *Chairman pro tem.*

FIBROID UTERI WITH CLINICAL EVIDENCES OF MALIGNANT DISEASE.

DR. ANDREW F. CURRIER.—CASE I.—The patient was 45 years old, a very fat Irishwoman, a cook by occupation. My experience has been that cooks, especially if very fat, bear severe surgical operations badly, and this instance proved no exception to the rule. This woman was bleeding constantly, and she presented all the clinical appearances of malignant disease. I operated upon her in the early part of last month. After cutting through an enormous wall of fat and exposing the tumor, I found it so wedged that it was almost impossible to get it out of the pelvis. My experience in cutting apart fibroid tumors—unless we can succeed in ligating the blood vessels at the start—is that we have great annoyance from the hemorrhage. I had anticipated that there would be great difficulty in releasing the tumor, but it was even worse than I had expected. Before opening the abdomen I had encircled the vaginal portion of the cervix with the actual cautery, hoping to loosen the tumor attachments in that way, but this preliminary procedure was of no particular use. The woman vomited what appeared to be bloody material before she was removed from the table. Although she had a strong pulse, her complexion was bad. I have noticed such condition in fat people after they have been subjected to the Trendelenburg position. In stout patients such position is not particularly advantageous. The patient left the operating table in fair condition and for twenty-four hours did well. Then she suffered with edema of the lungs and irregular heart action, which gave great anxiety for a few hours, but from which she rallied and seemed to be progressing favorably. For the next three days she did very well and I had reason to believe that she would recover. I should have stated that I opened the cul-de-sac of Douglas and packed it with gauze, allowing an end to protrude into the vagina. On the fifth day the action of her heart again became very irregular and her temperature began to rise. The lower portion of the abdominal wound was opened, but no evidence of suppuration could be found. She rapidly grew worse and

died the following morning. During all this time she had an intense bronchitis, which persisted until the end. Whether there was something wanting in regard to the technique, and what was the cause of her death aside from the weak power of resistance of the woman, I am unable to say, and I should be glad to receive suggestions from the members present who have had experience with such cases.

CASE II.—This second specimen was removed in October from a woman 51 years of age who had passed the menopause. She had some bleeding and an ulcerated condition of the os, which bore all the clinical appearances of beginning malignant disease. She was kept under observation for a month, and then I removed the uterus through the vagina. It was the size of a small cocoanut and was found to consist of a collection of small fibroid tumors. The ulcerated part was a broken-down submucous tumor of the posterior lip of the cervix. The patient recovered without any difficulty or hindrance, and is at present in better physical condition than she has been for a very long time.

DR. JAMES N. WEST.—It seems to me that when we have a patient of the build and physique that the doctor has mentioned, with a tumor of moderate size, it would be better to leave it alone, unless it becomes a matter of saving life. We must take into consideration the outcome of the case; we cannot offer a prognosis sufficiently favorable in such cases to justify the attempt of removing a fibroid of a size which is *not* causing any pressure upon vital organs, such as the ureter, the rectum, etc. If such pressure exists, of course we must act; otherwise it is best not to interfere.

DR. CLEVELAND.—What was the size of the tumor?

DR. CURRIER.—The tumor reached up to the umbilicus. That part of the tumor which was on the posterior aspect, resting against the spinal column, gave me the most trouble; it was lodged so firmly within the pelvis that it was almost impossible to remove it. The new tissue which had formed between the pelvis and the tumor was so firm that it was almost impossible to release it. If I had known that I was to meet with practically an irremovable tumor I should probably have deferred the operation.

DR. CLEVELAND.—I always feel wary about fat women; I am always afraid of them. I think I would probably be disposed to give the woman a chance for her life, if she was bleeding so much that there was danger from hemorrhage, by making an abdominal incision. Was it impossible to remove it by way of the vagina?

DR. CURRIER.—Yes.

DR. CLEVELAND.—It is impossible for one to say what he would do unless he had seen the case, so I have no right to criticise. But it strikes me that I would have been inclined to close the abdomen and let the case alone.

DR. BROWN.—Was no evidence of sepsis found when the abdomen was opened?

DR. CURRIER.—None. I think the temperature scarcely exceeded 100° F. until the day before she died. There was no vomiting, little abdominal distension, or much that was noteworthy aside from the pulmonary condition.

DR. BROUN.—My notion about drainage is that where we place drainage material it drains for the first thirty-six hours. After that an exudate is thrown out which prevents further perfect drainage. That is why I believe that patients do well for twelve or twenty-four hours; after that the exudate should be loosened up and allowed to escape.

DR. J. DOUGAL BISSELL.—Could the tumor have been removed by way of the vagina?

DR. CURRIER.—Impossible. The posterior portion of the tumor was a bar to doing anything whatever by way of the vagina.

DOUBLE PYOSALPINX.

DR. JAMES N. WEST.—Through the courtesy of Dr. Bachs Emmet I present two specimens of interest from a clinical point of view.

The first specimen was removed from a robust-looking woman, who was well nourished, with rosy cheeks, but who complained of constant and severe pain. No definite diagnosis of any pelvic condition was made. The abdominal walls were quite thick. On operation we found a well-marked case of double pyosalpinx. The patient made an uneventful recovery.

The second specimen presents much the same appearance as the first one; in this one we could peel off and leave the ovary intact. It is said that after rupture of the Graafian follicles the fimbriæ close down over the ovary, and it is interesting to see a similar process in a case of pyosalpinx when observed early. In this instance the fimbriæ doubled themselves together and closed the tube completely, showing Nature's effort to shut off the abdominal cavity.

Dr. West also showed a fibroid uterus removed by abdominal hysterectomy. The patient made an uneventful recovery.

A point of interest in connection with this case was that the woman gave birth to a child seventeen months before and this fibroid had evidently come on since that time. It was only because she had recently complained of symptoms that the growth was noticed.

DR. LEWIS G. LANGSTAFF presented

A NEW CURETTE.

This curette is especially intended for use in removing the remains of conception. It is made in three sizes and was devised by me about one year ago. It is distinguished by being hooked in shape; the applied edge is made of No. 5 piano wire bevelled on its upper side, half its thickness thus being cut away, making a thin edge, which is so shaped as to lie parallel with the surface to which it is applied. It is not a sharp curette and cannot cut.

We can hardly exaggerate the importance of the curette in

the class of cases for which this instrument is designed. The conditions which call for its use are urgent and serious; they confront the expert and the inexpert alike, the general practitioner as well as the specialist, and a safe and effective means of successfully meeting the condition is much to be desired. This instrument has been used by five operators other than myself, all of whom have been hospital internes. The cases operated on number about twenty-five. In none of these cases has the operation required to be repeated nor has an unfavorable result occurred. In my own cases—about fifteen—the results satisfied me that the uterus had been thoroughly cleared of its contents. In infected cases I used an antiseptic uterine douche at the time of the operation only, none being required afterward. This I regard as conclusive proof of effectual curettage. In those cases, of course, in which the system is thoroughly infected, no remnants of conception being retained, or in which the infection is derived from some other source than from infected and retained secundines, the curette is not applicable.

Though its use differs but little from that of other curettes, there are a few points which I would like to mention. As it is somewhat broad at the extremity, drawing down the cervix too strongly narrows the canal (as the calibre of a rubber tube is diminished by stretching it) and the curette cannot be so



promptly inserted. The instrument easily detects the presence of decidual or placental tissue—so distinctly, in fact, that I place absolute reliance on it; a change from that soft, velvety sensation to a grating one in operating indicates that the surface is cleared. *The curetting should commence at the upper edge of the tissue to be removed.* This is imperative, as a moment's thought will render clear. Very large pieces of placenta should be removed with the placental forceps.

To summarize: (1) It is safe, even in the hands of the inexperienced. (2) It removes at the same time that it detaches the tissue, and cannot hook into the uterine walls. (3) It is a superior palpator, and I believe will remove tissue that the finger would be unable to detect. (4) It cannot open fresh avenues of infection unless unjustifiable force is used. (5) It is less painful than other curettes. I have frequently used it without anesthetics, as, there being no fragments to come away after operation, increased dilatation is not often required. (6) It covers more surface and is much more rapid in action and leaves a clean uterus—in a word, it is effective.

The curette is made by George Tiemann & Co., New York City.

DR. GEORGE H. MALLETT.—I think that where a curette is indicated this one is an improvement over those now in use. In incomplete abortions I have not accomplished much with a

curette, for most of the secundines are at the fundus and difficult to get to. I prefer to dilate and then introduce the finger, use the placental forceps, and irrigate. I seldom curette in these cases. This curette would be a safe one even in the hands of the general practitioner.

DR. WEST.—The instrument is one that will accomplish much good. Sharp instruments, if used by persons not skilled in their use, do much harm. This curette is harmless. I should say, however, that in curettage for an endometritis, in a uterus moderately firm in structure, we must have something with a sharper edge.

DR. CLEMENT CLEVELAND.—This instrument appeals to me decidedly. The sharp curette I consider one of the most dangerous instruments that we possess—not in itself, but because it is too extensively used by the general practitioner. This point cannot be too strenuously dwelt upon. It is doing harm every day in the hands of men who do not properly understand its use. Frequently I have patients come to me who state that their family physicians believe they need curetting and ask me if I do not consider that these physicians can do it perfectly well, as they understand that it is a simple matter. I think the time has come for us to take a very positive stand and not assent to this operation being done so generally. I have seen many cases where the endometrium has been almost entirely removed by the too extensive use of the sharp curette, the reproductive power of the mucous membrane being almost completely destroyed. These cases suffer from very scanty menstruation and are not relieved by the menstrual flow of each month.

DR. CURRIER.—What Dr. Cleveland has just said is very important. I presume there is scarcely one of us that has been in practice a number of years who has not been informed by the general practitioners of bad results which they have had from the use of the curette. I think it is the fault of the gynecologists that so much evil has resulted, because they have stated that the curette is a perfectly harmless instrument and have encouraged its general use. I remember a patient who was brought to me some time ago and who was suffering from ectopic pregnancy. It was stated that the patient was curetted, the instrument passing through the uterus. This woman was very near death's door, but recovered after the removal of the uterus and appendages. Curettage requires considerable skill and should be done only by one who has had experience in treating uterine diseases. The general practitioner should not be encouraged to do this operation, unless he has had considerable experience.

DR. JANVRIN.—The remarks of the two previous men are very apropos, and the class of cases referred to every one of us has met with. Now, while the sharp curette is undoubtedly a dangerous instrument in the hands of men who have not had thorough experience in the operation of curettage, I still consider it a useful instrument. I myself consider curettage an operation which should not be attempted by any one

who has not had experience in performing it. At the same time, I have met with a great many cases in which the general practitioner did not go far enough; these cases I meet with constantly. The general practitioner is afraid to use the sharp curette as thoroughly as it ought to be used in many instances in which curettage is demanded. Consequently the patients are not relieved and the same trouble recurs. I can concur with Drs. Cleveland and Currier in what they have said about curettage, especially that this operation should only be done by men of experience, and then it should be done thoroughly. My own experience has been considerable in that line, more particularly in curetting cancer cases, and it is wonderful how far we can go in these cases, how thin the walls of the uterus can be left with safety, if careful and thorough work be done. With slow and careful work there is little danger of cutting through the thin tissue of the uterus. In those cases that I see at the New York Skin and Cancer Hospital, many of them come in with the statement that they have been curetted a few weeks before, and, so far as can be seen, nothing has been removed—at least, nothing more than portions of necrotic tissue. Therefore, I fully concur with the idea that the sharp curette should only be used by men of experience, who are not only aware of the dangers that must be encountered, but are also competent to avoid them. At the same time, as before stated, we meet with cases that have been so slovenly done that it would have been better not to have attempted it at all; at any rate, the patients have not been benefited by it. For these very reasons the instrument here presented can be used by men who are not accustomed to using the ordinary curettes with much more safety.

(To be continued.)

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Hydatid Cysts complicating Labor.—Such a case is described by J. Frautas.¹ The patient, 42 years of age, was married at 23. Her menstrual and general history had been normal. First labor, one year later, was spontaneous but prolonged and difficult, and followed by severe pelvic pain for several days. This occurred after each subsequent delivery, of which four took place up to her thirtieth year; labors like the first, all children living. Sixth labor at 32 years, prolonged, spontaneous, child still-born. She was warned by her attendant that labor would always be serious, but without any explanation. Two years later, forceps delivery of a living child. She was then told that she had a fibroid of the uterus. Operation was refused. In 1899 a miscarriage at three months was followed by rapid increase in size of the tumor, with sharp abdominal pain. In April, 1890, she entered Pawlik's

clinic. An irregular, elastic, indistinctly fluctuating tumor extended upward on the left nearly to the free border of the ribs; on the right, to four finger breadths below this level. Its lower extremity was felt in the anterior cul-de-sac. A small tumor was felt at the level of the umbilicus adherent to the large growth; extending to the left from the left cul-de-sac was a series of small tumors. Laparotomy showed a suppurating hydatid cyst of the left broad ligament, with many adhesions, which prevented the removal of the lower of two pockets of which it was composed. This was marsupialized, after excision of the upper portion, and also drained through the vagina. The small tumors in the left cul-de-sac were hard and presumably degenerated. These and small, hard, yellowish nodules in the omentum and parietal peritoneum were left. Convalescence was uneventful. In October, 1890, there was a six-weeks abortion. In July, 1892, she re-entered Pawlik's clinic in labor. Eleven tumors, some as large as a small nut, situated at the pelvic inlet, prevented engagement of the head. Death of the fetus and decomposition of the liquor amnii contraindicated Cesarean section or puncture of the tumors, and the cranioclast and other methods of traction removed the fetus with great difficulty. Uneventful puerperium. In July, 1896, a tumor was found reaching to the umbilicus; two others in Douglas' cul-de-sac. Operation was refused until after October, 1897, when the abdominal tumor suppurated and the smaller growth filled nearly the entire pelvis. Death followed this operation.

Rupture of the Uterus.—Franz¹ makes a report of 10 cases of complete rupture of the uterus and two incomplete. Of the complete, there were 6 transverse tears of the anterior and 1 of the posterior cervical wall, 2 longitudinal lacerations of the cervix involving the body of the uterus, and 1 transverse rupture of the vault of the vagina. The incomplete tears extended longitudinally in the cervix. In 7 cases there was contracted pelvis, with vertex presentation in 6 and transverse in 1 instance. The others included 2 transverse, 2 vertex, and 1 vertex presentation with placenta previa; 3 complete ruptures occurred, probably as a result of improper operative procedures; the rest were spontaneous. It is most important, from the standpoint of treatment, to differentiate between complete and incomplete rupture. In general, incomplete tears demand only packing. Of the 10 complete, 9 were treated by laparotomy; 1, moribund, was tamponed. In 4 instances the tear was sutured; total extirpation was done in 4, and in 1 supravaginal amputation. Of the 10 women, 5 died from infection and 3 from hemorrhage; 2 were saved by total hysterectomy. Of the 2 incomplete ruptures, 1 died from infection after tamponade; the other, from hemorrhage after supravaginal amputation. These chief dangers, infection and hemorrhage, are best avoided by total vaginal hysterectomy in cases of serious complete laceration with severe hemorrhage. In milder cases of complete rupture, packing with iodoform gauze appears from statistics to yield the best results.

GYNECOLOGY AND ABDOMINAL SURGERY.

Vaginal Celiotomy.—H. Fritsch^{*} advances the general principle that whenever the vaginal route can be employed it should be followed. In modification of this statement he limits the vaginal operation for ovarian cysts to those cases in which a benign cyst can be certainly diagnosed. He confines the vaginal route, in its application to myomata of the uterus, to those which are not larger than a child's head and are freely movable and of regular shape. For old ruptured ectopic pregnancies which are situated in Douglas' cul-de-sac and have resulted in a retrouterine hematocele, the vaginal operation alone is suitable. The sac does not require removal, but the contents must be thoroughly removed and free drainage obtained. New extrauterine pregnancy, larger than the size of a fist, and cysts inaccessible through Douglas' cul-de-sac, should be approached through an abdominal incision. Fritsch advises vaginal drainage of purulent collections in the appendages, unless the latter require removal. If this is necessary, and it is not desired to extirpate the entire internal genital tract, the abdominal route must be followed. The best technique for vaginal celiotomy is that which gives the best view with the least chance of injury of adjacent structures. For myomata this is through the anterior fornix, exposing the anterior surface of the uterus. The tumor is then attacked from in front, and sometimes preferably alternately from this direction and through Douglas' pouch. For all other cases a free incision extending from close to the posterior lip of the cervix nearly to the rectum, and opening freely Douglas' cul-de-sac, is preferable.

Treatment of Metritis.—After an exhaustive exposition of various forms of treatment, M. L. Beurnier^{*} states his own opinions as follows: 1. Acute metritis should be treated by absolute rest, poultices or ice over the abdomen, glycerin or vaselin tampons and hot douches until acute symptoms subside. Then the methods employed for chronic metritis should be substituted. The chief danger is not from the metritis, but from complicating unilateral or bilateral suppurative salpingitis. In such a case the abdomen should not be opened. Dilatation of the cervix, preferably gradual unless an urgent case, followed by intrauterine irrigations and dressings alone, are permissible and usually cause evacuation of the tubal contents. The diseased appendages generally require removal later when the acute attack has passed, though occasionally no subsequent intervention is necessary. 2. Hemorrhagic metritis can be treated satisfactorily by no other means than curettage. The patient should always be warned that, in spite of this and prolonged cauterizations, irrigations, and dressings, recurrences are frequent. 3. Simple chronic metritis should be treated by gradual thorough dilatation, irrigations, and intrauterine applications, preferably of pure tincture of iodine, nitrate of silver, chromic acid, chloride of zinc, etc. Protracted treatment is essential. 4. Chronic purulent metritis

usually yields to the same measures, but when the parenchyma of the uterus is completely invaded by the inflammatory process, especially for a long time, it is necessary to remove a uterus which is irrevocably diseased and can never perform its functions. 5. Electricity has not yet given sufficient results to recommend its use in any but exceptional cases. The treatment by bromine vapor has not been established. 6. Amputation, Schröder's operation, or other surgical treatment of the cervix is often necessary to secure permanent results, as the cervical lesions are generally too deep to be reached by applications or the curette. 7. Virginal metritis should be treated by intracervical or intrauterine instillations of pure tincture of iodine or 1:50 silver nitrate solution. 8. Diathetic metritis demands improvement of the general condition in addition to the usual measures. 9. The curette is intended for retained placenta and hemorrhagic fungosities only; in simple or purulent chronic metritis it is inefficient and may cause severe complications. 10. A uterus which has once been the seat of metritis is always subject, though cured, not to a relapse, but to a fresh inflammation. 11. After surgical cure of metritis two or three seasons at a hydrotherapeutic resort are of great advantage. 12. General treatment by purgatives, laxatives, intestinal antiseptics, tonics, antispasmodic and antineurasthenic remedies must never be neglected. Sea baths are advisable.

Treatment of Malignant Tumors by Anticellular Serum.

—Whaef ' publishes the results of injection of a serum obtained from geese which had been immunized for from eight to twelve months by inoculation with blastomyceta obtained from malignant tumors in human subjects. He has used the treatment in twenty-six cases of new growths in various organs and different stages, injecting from seven to fifteen cubic centimetres every five to eight days. He found the treatment innocuous. It caused a local swelling, also a temporary pain in and enlargement of the tumor, followed by perceptible decrease and encapsulation. Glands not invaded by the growth, but simply enlarged, regained their normal size; those involved became smaller. In the early age, when small, with no ulceration or extension to adjoining tissues or glands, the tumor may shrink and cease in its evolution. Regular treatment, rest, and diet are essential. When ulceration has occurred progress of the neoplasm may be delayed. All cases are improved in general and local condition. Inoperable cases may become operable. Whaef injects the serum under the skin of the thigh and confines the patient to bed for twenty-four hours. There is a general reaction, marked by a slight elevation of temperature and occasionally general pains as well as those in the tumor. During the first twenty-four hours the number of white blood cells becomes doubled, the red are unchanged. The polynuclear leucocytes surround and destroy the isolated epithelial cells. In two instances an urticarial eruption followed the injection of serum.

Cholelithiasis.—C. W. Mitchell¹ cites a case of cholelithiasis which was operated upon successfully. The material taken from the common duct showed pure culture of typhoid bacilli. He believes we are justified in the statement that the bacillus typhosus produces gallstones—firstly, because the bacillus is often found in the biliary channels when gallstones are present; secondly, it can be artificially grown in pure culture when so obtained; and lastly, bacilli so cultivated can produce gallstones.

Irritable Bladder.—Frederic Bierhoff² believes that in almost every case the term “vesical hyperesthesia,” or “irritable bladder,” is erroneously applied. As a true neurosis vesical hyperesthesia rarely occurs. Where vesical hyperesthesia exists it does so only as a symptom; in the majority of cases as a direct result of some change in the vesical mucous membrane, in the minority as an indirect result of changes in other organs adjoining or near the bladder. The diagnosis of the causative factor must rest upon a thorough examination not only of the bladder, but also of the urethra and genital and pelvic organs as well.

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¹ Ann. de Gyn. et d'Obst., Dec. ² Cent. für Gyn., No. 40. ³ Bull. gén. de Thér., Jan. 15. ⁴ Jour. de Méd. de Paris, Jan. 20. ⁵ Maryland Med. Jour., Jan. ⁶ Am. Jour. Med. Sci., Dec. 15.

DISEASES OF CHILDREN.

Antecedents, The, of Organic Heart Disease in Children.—Frederick A. Packard¹ gives the results of an examination of 75 cases of children with chronic heart lesions. Rheumatism had occurred in only 34, chorea in 16, scarlet fever in 11, diphtheria in 8, while in 14 none of these diseases had been experienced. If the small control series of cases can be taken as any guide, it would seem that measles, varicella, whooping cough, and typhoid fever have little or no influence in the production of endocarditis. We must therefore attribute many of our instances of inflammatory lesions of the endocardium to the slighter infections, such as coryza, various skin lesions, affections of the mucous membrane of the throat and nose, and the infections of the gastro-intestinal tract.

Causation, The, of the Congenital Stridor of Infants.—John Thomson and A. Logan Turner² thus conclude their study of the subject:

1. That the primary element in the causation of this condition is a disturbance of the co-ordination of the respiratory movements, probably due to some developmental backwardness of the cortical structures which control them.

2. That the change of form found is merely an exaggeration of the normal infantile type, and is mainly, if not entirely, the result of a constantly recurring sucking-in of the upper aperture of the soft larynx, which is induced by the ill-co-ordinated and spasmodic nature of the breathing. That it is, in fact, an acquired deformity strictly analogous to pigeon-breast.

3. That there is no proof that any congenital malformation of the upper laryngeal aperture exists in these cases.

4. That the supposition of a congenital deformity is not essential to account for the symptoms, inasmuch as normal babies crow in a very similar manner when they are coming out of chloroform.

5. That the sounds are not produced in the pharynx. This is proved by the high-pitched phonic character of the crow, and also by the fact that the stridor persists, not only when the nostrils are closed, but equally when the mouth is occluded by the nipple, when the tongue is depressed by a spatula, and during yawning. That they are not produced in the trachea by compression exerted by a large thymus or enlarged lymphatic glands we conclude on two grounds. First, because in none of the fatal cases of congenital stridor recorded have we seen enlargement of the thymus or lymphatic glands noted; and, secondly, because in two cases which we have examined, in which compression of the trachea by enlarged bronchial glands was found after death, the symptoms were of a very different type. In these cases the stridor was mainly expiratory, the larynx did not move up and down with respiration, as it does in cases of intralaryngeal obstruction, and there was much greater respiratory distress. The stridor is probably produced partly in the larynx proper, and partly at the abnormally approximated ary-epiglottic folds.

6. That the neurosis causing the symptoms has not in our experience seemed to depend on the presence of adenoid growths or other obvious causes of reflex irritation.

Diphtheria, Conclusions formed after Six Years' Experience with the Antitoxin Treatment.—Henry F. Köster¹ holds that antitoxin is a positive cure for diphtheria when employed in sufficient quantity and sufficiently early in the disease; that even when employed too late in the disease to produce its specific action, it cannot under any circumstances be productive of harm; and that when used before the invasion of diphtheria, antitoxin possesses a positive immunizing power which lasts about thirty days. To obtain its best effects it must be used fearlessly and in quantity sufficient to be effective, which is never less than 2,000 units, and that in very mild cases. In severe cases at least 3,000 units must be used, and this dose repeated in from twelve to twenty-four hours.

Ear Diseases among School Children.—Louis J. Lautenbach¹ urges teachers and physicians to systematically apply ear tests to children, and to ascertain the condition of the ears as to pain or discharge, and of the nostrils as to free respiration. The examination of nose and throat is imperative whenever the hearing is deficient, and inflammations or lesions of nose and throat liable to involve the ears, but not yet affecting them, cannot be taken too seriously. Pharyngeal adenoids, enlarged tonsils, and polypi should be removed as soon as possible, and catarrhal affections treated and hypertrophies

reduced before the ear structures become affected. Unless this be done, the needless sacrifice of life, hundreds of children dying yearly from middle-ear disease, discovered only after death—as well as the sacrifice of health and usefulness—will simply continue indefinitely.

Hernia in Children.—A. J. Ochsner,¹ writing of the treatment of this affection, says that his experience and study have led him to accept the following conclusions:

1. The development of herniæ in children is favored by: (a) faulty development of the abdominal wall; (b) insufficient strength in the tissues involved in closing the umbilical, inguinal, or femoral openings; (c) abnormal intra-abdominal pressure; (d) unclosed condition of the tunica vaginalis.
2. The causes (a) and (b) are likely to be inherited.
3. The abnormal intra-abdominal pressure is due: (a) to gaseous distension resulting from improper feeding; (b) to the exertion necessary to accomplish defecation in case of chronic constipation; (c) to the same exertion necessary to evacuate the bladder on account of obstruction due to phimosis; (d) to severe, long-continued coughs.
4. A large majority of all cases of hernia in children will heal spontaneously if the increased intra-abdominal pressure is relieved, the hernial sac being kept empty.
5. This can be accomplished by means of trusses, or, much more rapidly, in inguinal and femoral hernia, by placing the child in bed with the foot of the bed elevated, the time required usually not exceeding six weeks.
6. Children with a tendency to the formation of hernia should be guarded against developing coughs.
7. Their diet should be given at regular times and chosen with a view to avoiding gaseous distension.
8. Constipation should be entirely prevented.
9. In case of boys, phimosis should be relieved, if present.
10. Badly nourished and badly cared for children of the poor should be treated in hospitals, being placed in bed in the inverted position, the cause of increased intra-abdominal pressure being removed at the same time by proper treatment.
11. Operation is indicated (a) in strangulated hernia; (b) in irreducible hernia due to adhesions; (c) in case the opening is unusually large in a free hernia, especially if the condition is hereditary and the hernia cannot be retained by means of a truss; (d) in reducible hydrocele.
12. Except in class (c), the operation should consist simply in carefully dissecting out the sac, ligating it within the abdominal cavity, cutting away the sac and permitting the stump to retract within the abdominal cavity, and simply closing the wound in the skin.
13. The recumbent position, with the foot of the bed elevated, is of very great importance in the operative as well as in the non-operative treatment of herniæ in children.
14. If the child cannot be kept in this position sufficiently long, a well-fitting truss should be worn night and day until there has been no protrusion for at least six months, at the same time the necessary precautions being constantly taken to guard against intra-abdominal pressure from any cause.

Management, The, of Crossed Eyes in Children.—E. C. Ellett² thus summarizes his article: 1. All cases of squint

should be taken in hand as soon as the condition develops, and be treated by rest, glasses, and optical exercise. 2. The advice to wait until the child is 7 or 8 years old and then operate, while frequently given, is bad advice, since by this time the case will probably be purely surgical and the result to be obtained a cosmetic one only. 3. We should aim not only to make the eyes straight, but to develop in each its best possible vision, and enable the two eyes to see the same thing at the same time. 4. Operation is a last resort. While advisable earlier in some cases, it would usually best be deferred till the twelfth year, the intervening time being allowed for Nature and the surgeon to accomplish a cure by other means if possible.

Plantar Reflex, The, in Infancy.—John Lovett Morse* concludes a study of 254 cases with the statement that there is no constant plantar reflex in the first year, and that while the reflex approaches the adult reflex during the second year, it is still inconstant. It is also evident that since there is no constant reflex under normal conditions during the first two years, no conclusions can be drawn from the presence, absence, or character of the reflex in the diagnosis of abnormal conditions of the nervous system at this age. Further observations are necessary to show at what age the normal reflex is established. It is undoubtedly later than the second year.

Purulent Rhinitis of Children as a Source of Infection in Cervical Adenitis.—Carolus M. Cobb* describes the case of a child who, without any history of previous trouble with the nose or throat, has diphtheria at the age of 2 years and has a purulent discharge from the nose following this attack; two years later enlarged tonsils and adenoids are removed, and one year after the operation she still has a purulent discharge from the nose and a cervical adenitis following an acute coryza. The two questions suggested are: (1) What is the source of the purulent discharge from the nose, and (2) what causal relation, if any, does the attack of diphtheria bear to this discharge? As to the first, a chronic nasal discharge (with the exception of foreign bodies, dead bone, syphilitic and tubercular disease) always has its source in the nasal accessory sinuses. As to the causal relation borne by diphtheria to the discharge, the relation of diphtheria of the throat or nose to sinus disease presents itself in one of two ways: either there may be a true diphtheritic membrane found in the accessory sinuses, or the sinuses may be intensely inflamed during the course of the diphtheria, without true diphtheritic infection. In the case reported the attack of diphtheria was the exciting cause, but in other cases it may be acute coryza, influenza, croupous pneumonia, scarlet fever, measles, facial erysipelas, typhoid fever, cerebro-spinal meningitis, foreign bodies in the nose, etc.—in fact, any way in which infection may reach the sinuses. Infection having taken place and the discharge once established, absorption will sooner or later occur, and, the lymphatics of the nose being directly connected with those of the neck, a cervical adenitis may result at any

time, and unless the purulent rhinitis is cured the cervical adenitis will run a protracted course. So long as the source of infection remains unhealed it is hardly reasonable to hope to cure the adenitis. It is true that the infected glands can be removed and the process stopped in them, but this does not prevent others from becoming involved, and one would hardly care to remove the whole lymphatic system of the neck to prevent recurrence. It is more in line with modern teaching to first find the source of infection and to make the healing of this the objective point of the treatment.

Rheumatic Fever in Children.—Henry Heiman' states that there are certain features in the morbid anatomy of this disease which are almost *sui generis* to children. Thus there is less liability to joint involvement, which may even be altogether absent. Sometimes the only evidence of a joint implication is the subjective symptom of pain complained of by the child—the so called "growing pains." Or, if the joint be involved, there is less exudation and there are fewer structural changes of the joint and tissues, and therefore less pyrexia. On the other hand, there is a greater tendency to metastasis of the bacteria and their toxins, leading to an involvement of other textures and serous membranes and even the skin. We therefore have as a frequent accompaniment, or a manifestation of the diseased joints, a torticollis, an erythema nodosum, a purpura rheumatica, a chorea, an endocarditis or a pericarditis, or even a myocarditis, or a formation of tendinous nodules. The pleura is seldom involved in patients under 4 years of age. The complication most frequently present in childhood is an endocarditis. Many cases of cardiac disease found in adult life originated in this way. A frequent condition found in acute rheumatic fever is a peptonuria, which is probably caused by an abundant destruction of the leucocytes with an absorption of their peptones. In the treatment of the disease the indications are: first, to combat the poison of the disease; second, to alleviate the symptoms; third, to prevent involvements, notably of the heart, and to prevent recurrences. The last is important, for it is well known that an attack does not immunize, but, on the contrary, predisposes to subsequent attacks. The first indication to counteract the poison is best met by the salicylates. As in malaria quinine is administered prophylactically, so in rheumatic fever the author administers the salicylates prophylactically. After the acute local and constitutional symptoms have subsided, he continues the administration of the salicylates in three- to five-grain doses three times daily, according to age, for one week of each month for about a year or longer. So far as the alleviation of the symptoms is concerned, they are rest, immobilization of the joint, the local application of heat or cold, and the use of drugs as indicated. The prevention of involvement of the heart is included in the prophylactic measures already mentioned.

Rheumatism in Childhood.—George F. Still' lays stress

upon the point that a child may suffer severely from rheumatism who has never had a pain in its joints. "Pains in the limbs" may be just as significant of rheumatism in children as swollen, red, and tender joints. They may be the earliest indication of rheumatic taint, and as such should always serve as a danger signal. A child who has once shown such symptoms requires continual care as to clothing, climate, and the prevention of exposure to cold and damp. The presence of these indefinite pains in a child makes it necessary also to keep a careful watch on the condition of the heart; for these apparently trivial "growing pains" may be associated with or followed by cardiac disease as severe as any that occurs with the most acute articular rheumatism. It is worth remembering that the hip joint is frequently affected in the rheumatism of childhood. Another common complaint is pain at the back of the knee, often with no objective evidence of rheumatism in the knee joint. Stiff neck frequently occurs. The frequency of cardiac affections is one of the most characteristic features of rheumatism in childhood. In 170 cases 128 had cardiac bruits, which in 93 cases were certainly due to endocarditis. Cardiac dilatation is a frequent result of rheumatism. The wasting which often accompanies cardiac rheumatism is a more noticeable feature in children than in adults. Rheumatic nodules are of importance, and may occur with chorea without other clinical evidence of rheumatism. Tonsillitis so often occurs just before the onset of rheumatic pains in children that it would seem to bear some direct relation, possibly as medium of infection, to rheumatism. "Cerebral rheumatism" or "rheumatic hyperpyrexia" is almost unknown in childhood. Among the minor symptoms which rheumatic children are apt to have are "pain in the stomach," "pain in the side," and headache. Nervousness is prominent, shown by over-excitement, perhaps by excessive timidity or sensitiveness or night-terrors. Somnambulism, habit-spasm, and lenteric diarrhea are neuroses to which rheumatic children are subject. The association of red hair with rheumatism and rheumatic heredity is a curious fact noticed by the author. He suggests that the color of the hair is the index of some fine peculiarity, perhaps in the chemistry of metabolism, which produces a soil favorable to rheumatic infection.

Substitute Infant Feeding in General Practice.—Julius Noer* considers that the problem requiring solution is not so much just how a certain percentage composition may be obtained in a given mixture (although that is important) as what can be done to obtain pure, uncontaminated dairy milk for infant feeding. He describes the system in vogue in Copenhagen, the stock, the hygienic and sanitary conditions which must prevail at dairy farms, etc., all being under the supervision of a committee of control, composed of eminent medical and scientific men who have no financial interest in the concern. In the absence of a better arrangement in our cities, it seems to the author that it would be practical and

possible to require every dairyman and milk dealer to take out a license from the board of health, such license to be issued only after an inspection and a satisfactory report by a competent officer as to the health of the cattle, the sanitary conditions prevailing on the farm, in the stable, in the dairy, and in the methods of handling the milk till it reaches the consumer. The enforcement of sanitary regulations would necessitate the creation of a State dairy inspector. This officer should be appointed by the State board of health, his function being that of a sanitarian and scientist, and not that of a politician. As to percentage modification, the author never attempts to change the dietary of an infant who thrives and is in good health, no matter how unscientific and irrational a combination it may be taking. Of all short cuts to an easy solution of the mathematical difficulties involved in percentage estimates in domestic mixtures, the most simple and easy of application is to regard dairy milk as water holding in solution or suspension on an average 4 per cent each of proteids, fat, and sugar (the salts being disregarded). Now, if a tall jar holding a quart of this milk be set in a refrigerator where the temperature is 40° to 50° F., for six hours, the upper quarter will average 10 per cent fat, while the lower three quarters will average about 0.50 to 0.75 per cent. The other elements will remain nearly the same, averaging in the upper quarter 3.4 per cent proteids, 4.46 per cent sugar; in the lower three quarters, proteids 3.3 to 3.6 per cent, sugar 4 to 4½ per cent. By the use of a Chapin dipper or a siphon we may remove the desired quantity of cream and of the lower skim milk.

If we desire to prepare a milk mixture of, say, 100 cubic centimetres which will average, proteids 1 per cent, fat 3 per cent, sugar 4 per cent, we take 30 cubic centimetres upper quarter, equals fat 3 cubic centimetres, or 3 per cent when added to 70 cubic centimetres water. This 30 cubic centimetres cream contains also nearly 4 per cent proteids and about the same per cent sugar, which would give us 1.2 per cent of each for our mixture of 100 cubic centimetres. Our proteid is in slight excess, but, as our estimate of 4 per cent proteid for upper quarter is too high, this will be a very nearly correct estimate. Our sugar is too low, so we add 3 cubic centimetres milk sugar. To correct acidity 5 cubic centimetres lime water will be necessary. Our mixture will now read:

Upper quarter of the deep set milk.....	80 cubic centimetres.
Pure water.....	65 " "
Lime water.....	5 " "
Milk sugar.....	3 " "

Estimated percentage in the mixture:

Proteids.....	1 per cent.
Fat.....	3 " "
Sugar.....	4 to 5 " "

Approximate percentages of each constituent in our mixture may in this way be very easily estimated.

Almost any desired variation in composition may be secured by changing the proportion of cream and skim milk and the amount of water and sugar added.

Symmetrical Development.—E. Stuver¹ considers the question: Does our present school system develop the highest powers of the pupil? He calls attention to the following errors which are common in a great majority of our schools: 1. During the early, plastic years of childhood young children are given too many studies. 2. The daily sessions are too long. 3. Recitations are generally too long. 4. Intermissions or periods of relaxation are not frequent enough, and the children do not have enough exercise in the open air, with free, spontaneous, unrestrained play. 5. Pupils are frequently deprived of the privilege of attending to the calls of Nature. 6. The system of examinations generally followed is attended by many evil results. 7. Many teachers resort to cruel, dangerous, and harsh punishments, instead of whipping when corporal punishment is necessary. The author holds that the physical, intellectual, and moral powers of the pupils should be developed at the same time. Teachers should have a more thorough education, a more careful professional training and preparation for their work, and they should be better paid and thus encouraged to make teaching their life work. We need more enthusiasm and less routine; more original investigation and search after truth for the truth's sake, and less cramming for examinations; less talking and lecturing on the part of the teacher, and more time devoted to training pupils in systematic and logical analysis and in clearness and accuracy of expression. Fewer studies should be pursued at the same time, but the work should be more thoroughly done. Children should be given greater opportunities to study natural objects in their natural surroundings. More time and attention should be given to manual training. This training of muscles develops the motor centres in the brain, discharges the accumulating nerve force in the motor centres, develops and strengthens the association fibres between the various brain centres, and permits the higher brain centres to develop normally and store up power. This gives the student a richer sensory content, a more harmonious physical and mental organization, and a better-balanced moral nature.

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ORIGINAL COMMUNICATIONS.

NOTES ON VAGINAL CELIOTOMY;
WITH REPORT OF CASES.¹

BY

THOMAS J. WATKINS, M.D.,

Assistant Professor of Gynecology, Northwestern University Medical School;
Gynecologist to St. Luke's, Mercy, and Provident Hospitals,
Chicago.

SYNOPSIS—1. *Excision of a Portion of the Anterior Uterine Wall.* 2. *Incision of the Anterior Uterine Wall for Exploratory and Therapeutic Purposes.*
3. *Supravaginal Hysterectomy.* 4. *Hysterectomy (a) with ligatures, (b) without clamps or buried ligatures.*

THE report of the cases is made brief by the elimination of unimportant and uninteresting details in the histories.

1. *Excision of a Portion of the Anterior Uterine Wall.*—The operations were made as follows: The peritoneal cavity was opened through a T-shaped incision in the anterior fornix, the opening widely stretched, and the anterior wall of the uterus incised along the median line to a point nearly opposite the Fallopian tubes. About one-half of the anterior wall of the uterus was then excised. The uterine wound was sutured into the vaginal wound—that is, one line of sutures closed

¹ Read before the Chicago Gynecological Society, February 15, 1901.

the vaginal and uterine wounds. The bladder peritoneum was not sutured.

CASE I.—Mrs. K. O., age 38, suffered from a large, movable, retroflexed uterus. The principal symptoms were: menorrhagia, leucorrhœa, dysmenorrhœa, pain in the back, across the lower abdomen, and pain on defecation. The fundus of the uterus had, some months previously, been sutured to the peritoneum of the bladder through a vaginal incision. Examination showed the uterus to be retroflexed and much increased in size. On April 16, 1900, I operated with the intention of making a firm vaginal fixation. After opening the abdomen, however, the uterus was found so increased in size that it seemed impossible to keep it in normal position by any method of abdominal suspension or vaginal fixation, and that it would require a long time for it to return to its normal size if the usual treatment were employed. It seemed necessary to remove a portion or all of the uterus to effect a cure. The above operation was then decided upon and done. The recovery was as easy as is usual after a vaginal fixation of the uterus. This patient was examined about six months after the operation, and the uterus was about the size of the normal organ and in good position. Microscopical examination shows hyperplasia of the portion of the uterus removed.

CASE II.—Miss M. L., age 30, was referred to me for menorrhagia, which had been quite severe for the last year. Examination showed the uterus about twice the normal size, and a small fibromyoma was diagnosed in the anterior wall of the uterus. No cause of the disease could be found in the history. Operation was made August 15, 1900, as described above. After the abdomen was opened, a fibroid could not be found in the uterus, but the uterus was about twice its normal size. The increase in size consisted principally in thickening of the anterior wall of the uterus. Most of the anterior wall, the thickened portion of the uterus, was excised and had the appearance of a myoma. Microscopical examination showed the excised tissue to be composed almost entirely of myomatous tissue, but no capsule was present. Recovery was satisfactory, except a part of the wound healed by granulation and a fistula resulted, which was due to early removal of the sutures as a precaution against complications in case of labor. This patient was examined two weeks ago. The uterus was in about normal position and size, and the menorrhagia relieved. The value of removal of a portion of the anterior uterine wall

in severe cases of hyperplasia cannot be determined by this limited experience. The operation in these two cases was done in order to avoid removal of the uterus, which seemed otherwise necessary to effect a cure. The operation, however, will, I hope, be of value in the treatment of the very limited class of uterine hyperplasia for which hysterectomy has been advised and practised. The operation permits of perfect curettage and of topical application to the endometrium, which cannot be accomplished with the usual methods employed. The objection to the operation is the danger that the uterus will be so firmly fixed that complications will occur in cases of pregnancy. This danger can, I believe, be entirely avoided by the use of figure-of-eight silkworm-gut sutures for the closure of the wound, and by the early removal of the sutures.

2. *Incision of the Anterior Wall of the Uterus for Diagnostic and Therapeutic Purposes.*—This was done twice for the purpose of exploration of the uterine cavity, and proved of value in the treatment of two obscure cases of menorrhagia.

CASE I.—Mrs. M. P., age 31. Ill two years. Complained of menorrhagia, which was constant at times. The uterus was enlarged, hard, and sensitive to pressure. Her history was negative in regard to the cause of the hemorrhages. The presence of a small fibroid was suspected in the uterus. Operation was made October 16, 1899. The sound and curette failed to indicate the presence of a fibroid. After the abdomen was opened it was impossible to determine whether a fibroid was present or not, on account of the enlarged and hard uterus. Incision of the anterior uterine wall was then made for exploration, and showed the disease to be extensive hyperplasia of the uterus. The endometrium was much thickened, especially in the horns of the uterus. After thorough curettage the uterine and vaginal wounds were closed by through-and-through silkworm-gut sutures. The sutures were removed on the sixth day, and she left the hospital on the seventh day.

Menstruation did not appear the following two months, as the result, probably, of the thorough curettage or of the anemia consequent upon the hemorrhages. The uterus returned so rapidly to its normal size and consistence as to suggest the operation for the relief of difficult cases of hyperplasia of the organ. Examination about one year later showed the uterus to be not abnormally fixed or pathologically anteflexed.

CASE II.—Mrs. J. B., age 32, was referred to me by Dr.

Gurney Stubbs. She had suffered for three months from severe uterine hemorrhages at irregular times. The bleeding had been controlled somewhat by the use of tampons, but she was very anemic. The history gave no cause for the hemorrhages. She was taken to St. Luke's Hospital on June 28, 1900. Examination showed an enlarged uterus. The pelvic organs seemed normal otherwise. On the 28th and 29th of June, 1900, laminaria tents were inserted to produce sufficient dilatation for digital exploration of the uterine cavity. On the 30th an anesthetic was given and the uterine cavity explored. The sound and curette failed to show sufficient cause for the hemorrhage, although the mucous membrane was somewhat thickened. The tents had not produced sufficient dilatation for digital exploration. The abdomen was opened through the anterior fornix. The anterior uterine wall was then divided along the median line. The uterine cavity contained a pouch in the right horn, filled with a large amount of tissue which, on microscopical examination, was found to be hypertrophy of the endometrium. With the curette I had failed to remove any of the hypertrophied membrane in the horns of the uterus. The peculiar condition of the horns of the uterus was due to the organ being slightly of the bicornate variety. The uterine cavity was again very thoroughly curetted and the vaginal and uterine wounds closed with through-and-through silkworm-gut sutures. She was up on the fourth and left the hospital on the fifth day.

Dr. Stubbs informs me that she bled so profusely in the following period as to require the use of tampons, but that she has been perfectly well since then. In the two cases it was impossible to make a positive diagnosis, even after exposing the anterior uterine wall by vaginal celiotomy, until the uterus was incised. In both cases the treatment could not have been so effectively made without the incision, and in the second case I believe the curettage would have been useless had the incision not been made.

Should I have occasion to incise the anterior wall again in such cases, I would close the wound with the figure-of-eight suture, so as to diminish as much as possible the adhesions between the uterus and the vagina.

3. *Supravaginal Amputation of the Uterus.*—Mrs. C. R., age 50; illness dated from birth of second child twenty years ago. Menstruations had been regular until five years ago; for the two following years they occurred every two to four

months. For the last three years she has suffered from uterine hemorrhages, which occurred every three weeks and lasted ten to twelve days. Complained of constant headache, leucorrhea, and much pain on walking and standing. The uterus was prolapsed, retroflexed, and about three times the normal size. She also had a large cystocele and rectocele. Operation was made October 5, 1900. The peritoneal cavity was opened through a T-shaped incision in the anterior vaginal fornix, the anterior wall of the uterus divided along the median line, and the body of the uterus delivered into the vagina. The upper portion of both broad ligaments was clamped so as to include the ovarian vessels, the ligaments incised between the clamps and uterus, and the uterine arteries clamped lateral to the cervix, and the uterus amputated through the cervix. Ligatures were now substituted for the forceps; that is, one ligature was used for each forceps. The mucous membrane of the cervix was excised. A portion of the anterior vaginal wall was also excised, so that the sutures when applied would restore the anterior vaginal wall to its normal position. Sutures were now introduced through the anterior vaginal wall to the left of the wound, through the edge of the peritoneum near its point of reflexion on the bladder, through the cut edge of the broad ligament, and out through the peritoneum on the posterior wall of the cervix, and through right side of the vaginal wound. These sutures when tied left very little denuded surface exposed in the peritoneal cavity, fixed the anterior vaginal wall to both broad ligaments so as to eliminate the cystocele, and closed the vaginal and peritoneal wounds. Two or three sutures restored the vaginal portion of the cervix to its normal contour. An extensive Hegar's perineorrhaphy completed the operation.

The patient complained of very little pain after the operation, and left the hospital at the end of three weeks. This patient was examined yesterday and the result seems perfect. The vaginal scar resembles a slight tear through the anterior lip of the cervix, and the cervical canal is completely closed. Dr. H. D. Peterson examined the patient for me without being informed of her history or of the treatment that had been employed, and reported as follows: "Vaginal canal normal; scar in the anterior lip of cervix, probably the result of a slight laceration; cervical canal closed; uterus not found on conjoined palpation."

The advantages of the operation are:

(1) It leaves in contact the base of the broad ligaments, the posterior vaginal wall, and the cervix. The vagina is more normal than after complete hysterectomy, and the pelvic floor possibly stronger.

(2) It is a smaller operation than complete hysterectomy and proportionately less dangerous, more easily performed, and the patient makes a more easy and rapid recovery.

It is not applicable to malignant cases or to the bad purulent cases in which the broad ligaments are much involved and free drainage indicated. Like the ligature method in hysterectomy, it may be found difficult to perform through a small vagina.

4. *Hysterectomy*.—While discussing vaginal celiotomies I desire to urge the use of ligatures instead of clamps in suitable cases and to call attention to a technique which is not in common use. I now use ligatures in suitable cases, instead of clamps, because of the diminished amount of pain after operation, less risk of intestinal adhesions, and recovery is more rapid and less dangerous. The use of the catheter, which is always objectionable, is avoided. The technique is as follows:

The vagina is separated from the uterus; the peritoneal cavity opened anteriorly and posteriorly to the uterus; the anterior wall of the uterus divided its entire length and the uterus delivered into the vagina. A clamp is then placed on the upper portion of each broad ligament, internal or external to the ovaries and tubes as indicated, and the ligaments divided between the clamps and uterus; the base of each broad ligament clamped, divided, and uterus removed. A ligature armed with a short needle is now passed through the upper and lower edges of the tissue included in one of the clamps and tied as the clamp is removed. This is done with each forceps. These ligatures may be buried, or the knot may be left in the vaginal canal so that they can be removed. When tied in the vaginal canal, a portion of the vaginal wall is included with each portion of the broad ligament in each of the four ligatures. When the sutures are tied in the vaginal canal, the ones which include the base of the broad ligament should be inserted and tied first, as they close the opening less than do the others. When the knots are left in the vaginal canal the sutures are inserted so that each end of the suture passes through the vagina near the edge of the wound. The insertion of a few through-and-through silkworm-gut sutures, which pass through the edges of the anterior vaginal wall, of

the bladder peritoneum, of the rectal peritoneum and posterior vaginal wall, completes the operation.

This method of hysterectomy should, I believe, take the place of the old method of "ligate and cut" until the entire broad ligament is ligated and cut, which seems to be in common use and is the only ligature method which I have seen other operators employ.

The special advantages of this method are:

1. It is easily performed.
2. Four ligatures only are usually employed.
3. The tissues can be more firmly ligated than when the ligature is applied before the ligament is cut, and the ligature cannot slip.
4. Very little denuded surface remains after the operation is completed.

The simplicity of this technique is well illustrated by the mention of a case I operated for Dr. I. N. Danforth. The operation was for a fibroid of the uterus in a single woman, age 40, which increased the size of the organ about three times. The uterus was easily removed and the operation completed in less than one hour, although the uterus was large and the vagina very small.

1800 MICHIGAN AVENUE.

ON PUERPERAL INFECTION:

WITH SPECIAL REFERENCE TO DOUCHING AND THE PRACTICAL VALUE OF
BACTERIAL EXAMINATIONS.¹

BY]

AUGUSTUS WADSWORTH, M.D.,
New York.

(With illustration.)

THE primary object of this study was to determine the practical value of douching and the indications for diagnosis and treatment that may be drawn from bacterial examinations of the uterine and vaginal secretions and exudates during pregnancy and the puerperium. But these problems cannot be properly discussed unless the status of the general subject of puerperal infection is clearly defined. Thus the more im-

¹ From the Department of Pathology, College of Physicians and Surgeons, Columbia University, New York City.

portant facts and theories in the pathology and bacteriology of the vagina and uterus relating to the subject have been summarized. A large amount of work has been done upon this subject. Comparisons of statistics from several clinics have been contradictory. Bacterial examinations, numerically large, have not been often repeated in the individual cases. Thus, though many important facts bearing on the problems have been determined, the practical significance of bacteria in the vagina and uterus, the indications for their removal, and the actual results of douching have not been adequately demonstrated. It was therefore thought advisable to make systematic examinations at intervals before and after labor on a series of cases, douched and not douched, for purposes of comparison. Cases of toxemia¹ and infection not included in the series were also examined.

The study embraced 27 cases. From these, 70 specimens of secretion were examined microscopically by aerobic and anaerobic culture methods. Two of the cases were examined five times, 6 four times, 6 three times, 5 twice, 8 once.

The methods of other observers in collecting the vaginal secretions have been so varied, owing to the difficulty of avoiding contamination, that it was necessary to establish a technique which would insure accurate results.

Technique.—The methods of other observers may be summed up as simple transfers of secretion by platinum loop to media and cover-glass, usually with the aid of specula; or as a collection of material in more or less complicated tubes, such as have been devised by Döderlein, Kottman, and Menge. The insertion of these tubes or specula carries secretion at the entrance of the vagina to the deeper portions, and all the methods are subject to the same criticism—i.e., liability of contamination from extraneous parts. One of the methods of Koblanck is above criticism, and satisfactory if large quantities of material are not required. It consists of inserting a sterilized bivalve speculum a few centimetres and opening the valves, so as to expose beyond the lips fresh folds of mucosa from which material is collected on a platinum loop.

The following technique was devised and used throughout this work. Practically it was most satisfactory; the specimens were never contaminated, and only once failed, owing to the congestion and edema of the parts.

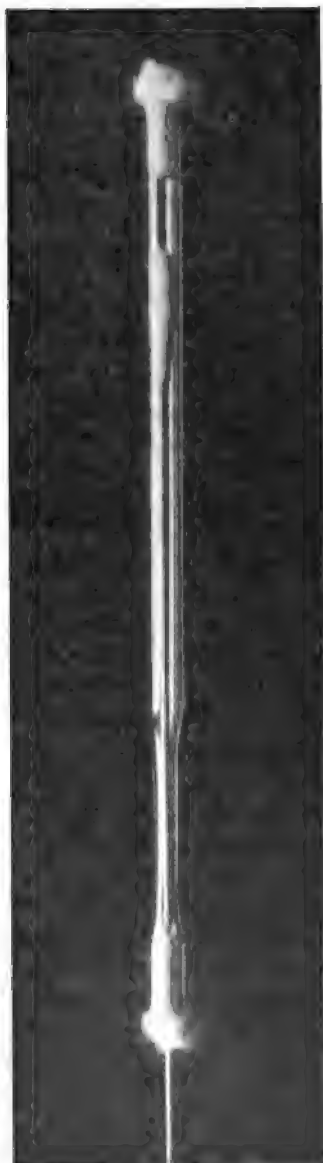
¹ The term toxemia, as used in this paper, is not limited to its special obstetrical significance as implying eclamptic conditions.

A thin, small-bore glass tube, flared slightly at the ends, is drawn out to a constriction at a point one-fourth of its length; this allows a steel rod, a few centimetres longer than the tube, to run readily in the lumen. A swab of absorbent cotton is twisted on one end of the rod and protected by the glass tube, which is plugged with cotton at both ends. These tubes are then sterilized in pipette cases. After removing the cotton plug from the swab end, the tube is ready for use and its introduction quite simple. At any desired depth the secretion may be collected by thrusting forward the swab, which is immediately drawn back into the tube, the apparatus removed, the exposed end passed through the flame, replugged, and taken to the laboratory. Care is necessary in the withdrawal of the tube to avoid any flowing of the secretion, when this is thin and profuse, into the lumen of the tube.

When material from special depths of the vagina is desired, a bivalve speculum, used in the manner already described, is not only an aid but essential, particularly with primiparæ, when the vaginal mucosa is not easily exposed.

As an experimental test of the procedure, material was collected, with and without the aid of a speculum, from two primiparæ and three multiparæ whose external genitals had been previously smeared with an emulsion of a known harmless organism. This organism was not present in any of the specimens obtained from the vagina.

A thorough vaginal douching and sponging of the cervix



with bichloride of mercury always preceded the collection of material from the uterus.

Methods of Staining Used.—Smears of the secretion were stained with aqueous methyl blue and aniline gentian violet by the method of Gram. A faint staining of the cell nuclei was used as a standard of decolorization for the latter preparations. Welch's method for staining the capsule was in some instances used.

Culture Methods.—Specimens of vaginal secretion should not be allowed to stand, as death of the organisms present takes place very rapidly, a fact especially noted by Halle and frequently observed by others in material from other parts of the body.

Plates of agar, serum agar, and gelatin with and without glucose have been the usual means employed by others for the isolation of species. Acid agar and broth in the hands of some observers have been of service. When anaerobic species were cultivated, the Liborius and Büchner methods were followed.

In my work, acid (HCl) agar, glucose broth, glucose serum agar, Löffler serum, lactose agar, and Hesse's agar for the cultivation of tubercle bacilli were of no special service; but gelatin, with or without glucose, kept first at 20°, then later at 37°, was a valuable means of distinguishing many of the so-called "vaginal saprophytes" which require body temperature from other organisms growing at 20°.

As a routine procedure, the secretion was rinsed off the swab into a tube containing one to three cubic centimetres of two per cent glucose broth. From this seed tube, glucose-gelatin-agar mixed plates were made and grown by the Büchner anaerobic method at 37°, and large loops were streaked on agar and serum agar for aerobic growth at 37°. By this last method many slight growths were obtained when the ordinary methods failed. The Liborius anaerobic method possessed a similar advantage in that considerable material was carried along the puncture and it was frequently used, but the slight growths thus obtained usually failed to grow in second generation.

Characters of the Vaginal Secretion.—The material found in the vagina, since there are no glands, is not a true secretion; it is composed of secretions from the cervix and uterus, and exudates containing exfoliated epithelium and leucocytes. During pregnancy this material is regularly increased, and the term secretion, thus qualified, may be applied to it.

The reaction of the vaginal secretion in pregnancy is acid to litmus. The alkaline reactions found by Gebhardt, Vahle, Döderlein, and others are probably due to the cervical mucus and of no significance. The average acidity has been expressed by Döderlein as 0.42 per cent sulphuric and 0.945 per cent lactic acid. Krönig reports, however, a permanent acid reaction in the bacteria-free secretion of the newborn, but Vahle found it more often neutral or alkaline. The marked acidity present during pregnancy is without doubt the result very largely of bacterial metabolism.

Döderlein and Burckhardt believed that normal and pathological types of secretion could be distinguished. The former included the white, usually granular, strongly acid secretions containing the bacillus vaginalis; the latter, purulent, slightly acid, neutral, or alkaline secretions containing cocci or short bacilli. Krönig, Kottman, Walthard, and others were not able to make these distinctions, though Krönig's 43.2 per cent pathological, on the above standards, compares very closely with Döderlein's 44.6 per cent; but Krönig found 74.7 per cent of these sterile. Kottman did not find the leucocytes or epithelium necessarily increased in pathological conditions.

These peculiarities, usual or unusual, in the appearance of the vaginal secretion, though they may suggest certain probabilities as to the condition present, are not always reliable standards for diagnosis; for pathogenic organisms may very easily be overlooked in so-called normal secretions, and the harmless trophic disturbances receive unnecessary treatment. Such errors, not necessarily serious, are illustrated by some of the writer's cases.

Two, suspected of gonorrhea, presented the same clinical symptoms—profuse discharge, burning on micturition, irritation with marked congestion, and edema of the parts, all of which were due to disturbances of circulation; no pathogenic bacteria and only a few saprophytes were found in either case. In a third (Case B, see page 450), streptococci were found and the douching continued until the secretion was of normal appearance, yet the organisms were still present. The same conditions were present in Case A (page 450). Nothing abnormal was observed in the puerperia of three of the cases; the other was not confined in the hospital and thus was not subsequently observed.

The bactericidal power of the vagina, ascribed by Döderlein to the vaginal bacillus and considered by Menge and Krönig a property of the secretion itself, is a misleading term, for it

simply indicates that some species, notably many of the pathogenic, find in this environment certain variable conditions, mucus, exudates, and possibly bacteria, more or less unfavorable to their growth, and they therefore usually disappear from the secretion.

Bacteria of the Vagina.—Without discussing the general merits of the expression saprophytic as opposed to parasitic, it seems that these terms, so frequently used, do not bring out completely the relations which micro-organisms bear to the vagina. The bacteria of the vagina are necessarily acquired, their presence variable, and, provided their environment is favorable, any organism, pathogenic or non-pathogenic, may exist for a longer or shorter period when once access is gained. In this more or less constant environment the bacterial metabolism must be very gradually differentiated toward a type. It is therefore more rational to consider the organisms found in the vagina as usual or constant and as temporary or casual in their occurrence.

Pathogenic species are only occasionally found; these will be discussed later.

The so-called "vaginal saprophytes" are the bacteria more constantly present and, as far as at present determined, are harmless. Krönig believes they are essentially anaerobes. His conclusion is based on a series of cases, 92 per cent of which gave sterile plates. Walthard, Kottman, and others are opposed to this view. Sterile plates do not exclude the presence of aerobic species, for, as is often observed in other secretions, and particularly in that of the vagina, the number of species found by culture seldom represents the total present, morphologically, in the smears. Our artificial media are no substitutes for the conditions under which these organisms have been growing in the vagina, and they die very rapidly, irrespective of the presence or absence of oxygen.

Experimental inoculations of the vaginal secretion in animals have been made by Döderlein, Kehrer, and others, with variable results. Reactions such as abscesses, with and without bacteria, and occasionally death, were not infrequently obtained. They depend very largely on the quantities of material introduced, and ought to be controlled by inoculations with pure cultures of the bacteria present in each secretion.

In this work 50 specimens of vaginal secretion, excluding the postpartum, were examined. Organisms were present in

the smears of all but two. Usually more than two species could be made out morphologically, but not infrequently the organisms were apparently in pure culture. Cultures were sterile in 6. One species only was found culturally in 22, two species in 16, and three in 6. These growths could rarely be carried beyond the first generations. They were very exceptionally identified. Organisms were much less frequently present in the lochia which were collected from the vagina six to twenty-four hours after labor, and always in very small numbers. Fifteen specimens of lochia collected from the vaginae of as many cases were examined microscopically and culturally. The smears of 7 failed to show any bacteria, cultures were obtained from 8; once an organism was obtained in the cultures when the original smears of the secretion were microscopically bacteria-free, and, conversely, once organisms were present in the smears which failed to grow in culture. Three of these cases (see page 450) yielded streptococci. The uterus and vagina of two other cases, examined thirty hours and eight days after labor, were free from organisms.

From these examinations of the vaginal secretion and lochia it was evident that the so-called "vaginal saprophytes" comprised cocci as well as bacilli, and that they vary greatly not only as to the extent but also as to biological peculiarity of growth on our artificial media, to which they are extremely sensitive. These organisms were not infrequently anaerobic, though the aerobic were more often found. Many of these organisms disappear during labor.

It is useless to enumerate the various organisms that have from time to time been isolated from the vaginal secretion. The non-pathogenic bacteria temporarily present are of no significance, whereas those more constantly found and stable in this environment are isolated and cultivated with considerable difficulty and the necessary data for identification rarely obtained. When the characters are determined, the standard descriptions for accurate comparison are inadequate, except possibly for one organism, the bacillus vaginalis of Döderlein, which may, however, only represent the type of a group. The characters of this organism may be of interest.

According to Döderlein, this bacillus was present in 55.38 per cent of all cases. Burckhardt found it in 59.4 per cent of his cases.

It is of medium size, straight, non-motile, forming threads; aerobic and anaerobic; spores have never been observed;

retains the stain by Gram's method; 27° C. is the lowest limit of growth. It does not grow on ordinary media, except after a short incubation in glucose broth (Döderlein). This is clouded without the formation of a pellicle. Walthard found that the growth failed in gelatin and on potato; in milk, coagulation resulted in from six to eight days. Williams confirms the gelatin and potato findings, but the milk was only acidified. Glucose agar is clouded. Krönig isolated this organism by pour plates of acid agar and glucose agar. Williams reports an organism of similar reaction, but it was cultivated on ordinary agar and acid agar. Krönig classifies the *bacillus vaginalis* as an anaerobe.

Organisms belonging to this type were found by the writer. The growths varied from a few cell divisions to colony formation similar to that of the anthrax bacillus. Growth developed in gelatin at 37° without liquefaction. The organism never grew on serum agar plates, with or without glucose. This reaction is paralleled by the fact, also noted by other observers, that this organism disappears after labor. In the lochia of one of my cases a few of these organisms were present. They were probably only inhibited, as they were practically absent from the smears.

Another bacillus observed by the writer was quite constant in morphology and frequently present. It may correspond to the diplobacilli noted by Döderlein and others. The morphology is that of a fine diplobacillus, about the breadth of the tubercle bacillus, but shorter and straight, appearing in clumps of pairs, more rarely single and in short threads. The stain is for the most part retained by Gram's method. Growth was obtained but once for one generation in close symbiosis with a coccus which was also grown with difficulty. Though often present in smears of material from other and even the same case, no growth took place. Other methods of cultivation may in the future distinguish varieties of organisms presenting these characters.

Gottschalk and Immerwahr report two cases of sensitive enlarged uteri; in one a red yeast was found in pure culture, in the other a white yeast. The secretions were acid. White yeasts have been noted by several observers and no significance attached to them. The writer found them in the vagina quite frequently, but always in very small numbers.

The occasional presence of pathogenic organisms is usually transitory; they may, however, live for some time as harmless parasites, and, though certain facts suggest an attenuation with loss of virulence in the vaginal environment, practically the power of inciting disease processes is retained.

The experiments of Schlüter and also Witte on the effect of acid on certain bacteria, including the pyogenic streptococci

and staphylococci, show that the percentages of acid usually present in the vagina may inhibit their growth, but this does not imply a loss of virulence; on the contrary, conditions which keep the state of metabolism of virulent organisms constant, with or without growth, preserve the virulence. Thus Turro found less loss of virulence in streptococci on acid media. Caselli found no loss of virulence toward rabbits in streptococci which had existed as long as forty-five days in the vagina of this animal.

The writer found in one case (A, see p. 450) streptococci pathogenic to rabbits, which had existed in the vagina for more than fifteen days before labor. No loss in virulence was detected.

Bacteria of the Normal Uterus.—The body of the uterus is usually, under normal conditions, free from micro-organisms. Many observers have found bacteria in the apparently normal uterus. Stroganoff found the bacteria of the vagina extending up to the mucous plug of the cervix, but not penetrating it, and experimentally proved the mucus an unfavorable environment for bacteria. His observations probably represent the rule for normal conditions.

The conflicting views and results regarding the presence of bacteria in the uterus and cervix are probably due to the prevalence of endometritis, which may or may not be accompanied by, or be the result of, bacterial growth. Bumm believes the organisms causing the primary infections hold the same relation to the endometritis which afterward becomes chronic. Gottschalk and Immerwahr found the hyperplastic form less often associated with bacteria than the catarrhal. They, since 37½ per cent of the cases of endometritis are sterile, agree with Bumm and Döderlein that the catarrhal form can exist without bacteria and is not of bacterial origin. One case reported by them was at first sterile; later, following iodine applications, yielded increasing numbers of organisms. This is corroborated in principle by the experiments of Morisani with the bacillus coli communis; inoculations on the intact mucosæ of guinea-pig uteri were without result. Following chemical or mechanical injury, a purulent endometritis regularly developed, extending in some instances to the peritoneum and other organs with fatal termination.

Pathogenic Bacteria of Puerperal Infection.—The more important bacteria found in puerperal infections are the streptococcus, staphylococcus, bacillus coli communis, gonococcus,

and bacillus aerogenes capsulatus. Any of these organisms may penetrate the tissues of the uterus and thus give rise to a true infection.

The *gonococcus*, formerly believed to be exclusively a parasite of the mucosæ, has been demonstrated in lesions of other tissues of the body. Ahmen, Collombini, and Halle have each isolated the organism from the blood during life, and, though usually limited to the mucous membranes, exceptionally general infections occur.

The sites of predilection are the urethra, uterus, and duct of the gland of Bartolini. Abscesses of the gland proper are usually secondary, the result of occlusion or infection by other bacteria. Extension from these points to other portions of the genito-urinary tract occurs in a varying proportion of cases. The gonococcus is not often found in the vagina, and pathological processes are still more rarely induced.

Many special, well-known characteristics, more or less accurately established, attend the pathological changes and reactions induced by this organism. Others have of late been modified. Thus the condition of "latent gonorrhea," commonly supposed to follow the more acute primary inflammation and to be a source of infection for an almost indefinite period, is now believed to be less usual and even exceptional, the termination being more often either a spontaneous cure or a secondary infection with other bacteria which supersede the special organism, which during the early stages is pure or in greatly predominating numbers. As opposed to mixed infection, secondary infection is without doubt the rule. The former occurs not infrequently.

Noeggerath and many others have shown quite conclusively that the latent gonorrhea may during pregnancy become acute. The puerperium predisposes to this inflammation, the clinical manifestations of which are more often apparent several days, and even weeks, after labor. The local reaction may escape notice, as evidenced by Halle's case of general infection from an apparently normal uterus in which the organism had existed for several months. Wassermann found that the gonococcus does not live long in closed sacs—i.e., chronic abscesses of the tubes, ovaries, peritoneum, etc.—whereas its vitality on the free mucosæ and in the small ducts was much greater. The aerobic character of the organism, as well as the liberation of toxins from the dead cell body, may account for some of these facts.

Compared pathologically to the other pyogenic cocci, the gonococcus possesses the same capabilities, but the rule of the one is the exception of the other—i.e., the pyogenic cocci are rarely parasites of the mucosæ, and the gonococcus seldom develops in the deeper tissues. The gonococcus inflammation, by injuring the mucous membranes, renders them suitable environments for the pyogenic cocci.

Streptococci have been found in the vagina by Döderlein, Gönner, Koblanck, Kottman, Savor, Walthard, Williams, and others. Some of these results have been attributed to faulty technique in obtaining the material, but this will not account for all. At present the identification, not only of the vaginal streptococci, but also the streptococci found in other secretions and exudates, is quite indefinite. The cultural distinctions of Von Lingelsheim, Kurth, and others, on which classifications have been attempted, depend principally upon the environment, and have been observed in different cultures of the same organism. The results of animal inoculations have been variable and unreliable, for a streptococcus may show a high grade of virulence toward one set of animals, including man, and yet be innocuous for others. As a virulence is specialized or increased in one animal it may be diminished in others, and no definite relationship between any of these grades of virulence and the various biological idiosyncrasies has as yet been demonstrated.

Two views at present obtain respecting the streptococci: one which considers them as variations of one species, the other as separate species. The former requires some definition or limitation of the one species, at present quite impossible; the latter simply multiplies these requirements.

Atypical characters have been noted in the streptococci isolated from the vagina. Those found by Burguburu failed to grow in gelatin. Walthard in single instances obtained some liquefaction of the gelatin, and cell division occurred on potato, but no visible growth developed. He was unable to isolate them by the plate method, and they were non-pathogenic to rabbits. Stähler and Winckler conclude that these streptococci should be considered as ordinary streptococci of weakened virulence. Bureckhardt, on the contrary, found cultural differences which were constant; he therefore believes them distinct. These unusual forms of cultures may be due to variations in media, to changes in the cell metabolism brought about by the vaginal environment, or to original differences

in the species or varieties. No definite standards for differentiation have as yet been formulated, and most observers are unable to distinguish their vaginal streptococci from the ordinary pyogenic form.

When introduced, streptococci usually, as shown experimentally by Krönig, disappear from the vagina. Three of the writer's cases, however, had streptococci in the vagina for a number of days; the longest known time was six weeks. In one of the cases the organism was pathogenic to rabbits.

The following cases illustrate the points just noted:

CASE A, æt. 23, Igravida, March 7, 1900. *Normal labor and puerperium.* Four vaginal examinations during labor, March 25.

Bacterial examinations were made March 10, 21, 26, and April 4. Patient had a profuse discharge for three weeks before entrance, which improved under douching.

The streptococcus was isolated in pure culture, except at the second examination, when a vaginal bacillus was also present. It was short-chained, but uniform in its reactions; coagulation of milk on boiling, acidification of lactose agar, etc.

The organisms obtained from the first three examinations by intravenous inoculation killed rabbits in sixty-five, forty, and forty hours respectively.

CASE B, æt. 31, Vgravida, February 17, 1900. *Normal labor and puerperium.* Three vaginal examinations during labor, March 20.

On admission patient had a profuse leucorrhea, relieved by frequent vaginal douching, bichloride of mercury 1:5000. March 5, condition apparently normal.

Bacterial examinations made February 20, March 8, 26, 31.

Streptococcus, non-pathogenic to rabbits by intravenous inoculation, was isolated from first three examinations in pure cultures, but bacilli were also present in the smears of the first and second specimens. The organism found at second and third examinations failed to produce acid on lactose or any coagulation of milk, even on boiling. Both reactions were present in the first organism.

CASE C, æt. 23, Igravida, February 13, 1900. *Clinical diagnosis: gonorrheal warts; justo-minor pelvis; abnormal mechanism; prolapsed cord; premature labor.*

Patient has had discharge month before entrance. History dates back two years, when she had painful micturition and sudden discharge, which healed after some weeks. There are now patches of warts on the external genitals. But the vagina has the dusky color, and the secretion is moderately thick, granular, white. Examined once during labor, April 3. *Normal puerperium.*

Bacterial examinations made February 16, March 6, 31, and April 4. Streptococci, with bacillus vaginalis and coli com-

munis, at the first, and pure at the fourth examinations, were identical, except the latter failed to coagulate milk, and, inoculated intravenously, produced no immediate reaction, but at point where animal had fractured leg an abscess developed with fatal termination. The streptococcus was apparently recovered. At the two intermediate examinations typical vaginal bacilli in pure culture were present.

Menge and Krönig, also Halle, have isolated anaerobic streptococci from the genital tract of women.

Veillon obtained from fetid gangrenous lesions in other parts of the body an organism, the micrococcus fetidus, which was, except for the length of chain formation, similar to the anaerobic streptococcus of Krönig (1897). The first two observers have in a recent paper classified these anaerobic streptococci in three forms. I. and II. are exclusively anaerobic and do not grow in fluid media in the presence of oxygen; II. clouded media, with production of foul odor; III. is temporary and grows more rapidly at room temperature than I. and II. These organisms continued anaerobic in spite of the generation, media, and gradual exposure to oxygen. They found temporary and obligatory organisms in symbiosis, and obligatory anaerobic streptococci which were true parasites.

The writer isolated an anaerobic streptococcus from the uterus of one case—D.

CASE D, æt. 22, Igravida, June 2, 1900. *Clinical diagnosis: dry labor; dilatation cervix; median forceps; justo-minor pelvis; abnormal attitude; sepsis; thrombosis portal vein.*

Labor, June 3. There was considerable odor after birth, requiring a uterine douche. The perineum was also torn. The infection started in with high temperature, 104° F., chills on second day, and severe gastric symptoms. Distension and jaundice on fifth and tenth days; pulse was never over 120; chills irregular up to sixteenth day; fourteenth, began to improve; sixteenth day, shoulder joint slightly involved. On July 9 patient was discharged cured. Fifth day of the puerperium, uterus curetted and douched; dark fluid and mucus shreds in the return. There was a dirty greenish exudate on cervix and posterior surface of the vagina. Patient received several uterine douches up to the twelfth day without any appreciable effect.

Material collected just before curettage for bacterial examination from vagina and uterus.

Smears from each quite similar; a mixture of bacteria, small, fine bacilli and cocci in large numbers, many decolorizing by the Gram method. All cultures were at first sterile, aerobic and anaerobic. A fermentation tube especially de-

vised for anaerobic growth had been inoculated with considerable secretion clouding the whole media. After this had settled, a growth of streptococci, apparently pure, developed in the closed arm, with formation of a small amount of gas which failed to explode or extinguish a spark (quantity too small). No odor was detected. All attempts to gain a second generation failed by strict anaerobic methods in the same and other media. The anaerobic character, the clouding of the media, and formation of gas suggest this organism being grouped with Menge and Krönig's second class of streptococcus. Though the small amount of gas gave no appreciable odor, the lochia after birth were foul, but not necessarily due to the organism, as subsequent infection might have occurred.

The pyogenic *staphylococci* have been found in the vagina by Gottschalk, Immerwahr, Kottman, Walthard, and others. They are more easily identified, but much more rarely found in puerperal infections, than the streptococci. The writer found the staphylococcus aureus twice, mixed with streptococci, in purulent discharges from the vagina. They were not found in the uterus.

The *bacterium coli communis* as an inciting factor of puerperal infection has been definitely recognized (by Von Franqué and others) only during the last decade. Its presence in the puerperal uterus is almost always the result of the various procedures, examinations, etc., of labor. Extension on the part of the organism itself has never been satisfactorily established. Exceptionally its presence in the uterus may be secondary to other processes in the body. It is therefore especially significant in the anti- and asepsis of labor; and though the increased percentage of recorded infection due to this organism is in part the result of advancing knowledge, it also indicates neglect in the sterilization of the perineum.

Gebhardt believes this organism the most frequent, though not the sole, cause of physometra. In 6 of his cases it was mixed with streptococci, but in the remaining 5 pure. He also reports 25 cases of colon infection; 1 developed gas in the blood vessels.

The bacillus coli communis was only once found by the writer as a temporary or casual inhabitant associated with streptococci and vaginal bacilli.

Another group of bacteria has been found associated with puerperal infections. They are the class of anaerobes to which belongs the *bacillus aerogenes capsulatus* of Welch and Nuttall. Besides these authors, Ernst and Fränkel were among

the first to recognize the anaerobic gas-producing bacteria in pathological conditions. Since that time the number of reported cases has steadily increased.

Welch has very recently accurately defined the status of the bacillus *aerogenes capsulatus*, extending not only its distribution, but also its rôle in pathology from postmortem invasions to an active factor in the infections, local and general. He considers the similar organisms described by Ernst, Fränkel, Krönig, Lendenthal, identical. Gebhardt's results are doubted, and to this organism the conditions *physometra*, gas septicemias, as well as the reported findings of air in the blood vessels, are mainly attributed, and the colon bacterium, requiring carbohydrates for gas production, is on that account excluded. In its wide distribution the normal vagina is included, but the intestinal tract figures most prominently. Its relations to puerperal infection are therefore similar to that of the colon bacillus.

An organism of this class was once found by the writer associated with streptococci, staphylococci, and colon bacilli at the autopsy of a case of labor induced for hyperemesis. The organism was not present in the vaginal secretion just before labor. The bacilli of *tetanus*, *diphtheria*, *typhoid fever*, and the *pneumococcus* have also been reported in puerperal infections.

The Puerperal Wound Infection.—The pathological reactions described in the text books as fermentation fever, irrespective of the origin or value of the term, are induced by the absorption of products of changes in the blood clots, exudates, etc., occurring independently of the growth of micro-organisms. The condition is therefore a toxemia, never an infection.

The advances of pathology and bacteriology have placed the infections following labor among the wound infections. These differ from those of other portions of the body only in respect to the anatomical relationships. Olshausen subdivides them into infections and intoxications, excluding tetanus, diphtheria, etc., as specific diseases, as also gonorrhea, which he is not always able to distinguish from streptococcus and staphylococcus infections.

Bumm excludes the intoxications, claiming a diagnosis of infection may be made from ulceration and macroscopic appearances, and in twenty-four hours the gonococcus may be excluded by microscopical examination of smears and plate cultures. He distinguishes two classes:

1. Putrid endometritis induced by putrefying bacteria in the more superficial layers of the decidua, but limited by granulation tissue, the organisms never penetrating the tissues of the uterus.

2. Septic endometritis induced by pathogenic organisms from which various lesions may develop. Some cases show no macroscopic change. Usually, however, there is a croupous exudate, or the whole mucosa is changed to a dirty-colored mass which is readily scraped from the muscle. The purulent, croupous, gangrenous, etc., are only forms of this class. He recognizes in the local lesion a superficial necrotic zone; mixed with this a thin bacterial layer and a zone of reaction composed of round-celled infiltration. The bacteria do not pass through the granulation wall which limits the pathogenic as well as the saprophytic. The course of the infection from the endometrium was, in his five fatal cases, three times by the lymphatic, twice by the blood vessels. The three former were histologically similar to erysipelas skin lesions, and the process extended to the peritoneum. The two latter showed septic thrombosis of the veins, resulting in pyemia and septicemia. The factors determining these variations were the contractions of the uterus, the resistance of the various tissues to the extension, the virulence of the organisms. Extension by the tube, as reported by Krönig, was excluded in the above cases, the tube being free from bacteria at its inner portion except just at the uterine opening.

De Pourtalès confirmed these findings of Bumm. In one case, however, no organisms were found in the tissues of the uterus or lateral ligament, extension occurring through the tube. He distinguishes a primary and secondary septic phlebitis. The former is an invasion of micro-organisms along the endothelium, followed by the formation of a clot filling the lumen of the vessels; the latter is the penetration centrally of a pre-existing aseptic clot. Both result in the destruction of the clot, and the ultimate histology is the same for each. Though Krönig reports extension on the surface of the mucosa through the tube, he found the lymphatics and the blood vessels the paths more often selected.

Pathogenic organisms from processes in other organs may be carried or extend within the body to the pregnant and puerperal uterus. Recker reports streptococcus findings in the dead fetus in two cases of septicemia, one a pseudo-diphtheritis, the other a cellulitis. Max Wolff claims that only

such organisms go through the placenta as induce pathological changes—*i.e.*, hemorrhage, etc.

Czerniewski, in 91 cases of fever in puerperium, found in 35 the streptococcus pure; mixed with other organisms in 14. Krönig, in 296 cases of fever in puerperium, found the streptococcus in 56. These reports show quite conclusively that the streptococcus is a most important excitant of temperature reactions in the puerperium, and the relatively higher percentages of streptococci found in the statistics of fatal cases demonstrate not only the frequency but also severity of these infections.

Hirst has collected from the reports of Czerniewski, Widal, and Bumm 91 cases of puerperal infection, in 85 of which the streptococcus was found.

The place of attachment of the placenta is the usual seat of infection, and invasion of other tissues takes place by the blood vessels and lymphatics, exceptionally along the surface of the mucosa to the tube, but the mucous membrane is a more favorable environment for the gonococcus; thus the rule is inverted when this organism is the excitant. Bacterial metabolism in the puerperal uterus excites an intoxication or an infection. The former may be the result of the growth of non-pathogenic or pathogenic organisms, giving rise to the conditions sapremia and septic intoxication respectively. Owing to the indefinite limitations of pathogenicity, these terms are in some cases necessarily very hard to distinguish.

Vaginal Douching.—The advisability of vaginal douching is at present a debated question. Some obstetricians practise it as a routine, others do not believe in it. A few limit its use to hospital cases. The central point on which the problem depends is the danger that attends the presence of pathogenic bacteria in the vagina, and the object of the procedure is their removal.

Comparison of statistics which have been cited by both sides begs the fundamental questions and is of no scientific value. As the percentages of puerperal infection and toxemia have become so small, the difference of such comparisons is better explained by errors in diagnosis and asepsis and the variations in technique at the different hospitals.

The experiments of Döderlein, Steffek, and others tend to prove that ordinary douching, with or without antiseptic solutions, does not remove the bacteria from the vagina. This can only be accomplished with any degree of certainty by careful cleansing and rubbing of the whole mucosa in addition

to the flushing. And since Krönig has shown experimentally that the vagina after douching requires a longer time to eliminate pathogenic species experimentally introduced, the vagina should not contain any pathogenic germs after douching or they will be better able to establish themselves in this environment. Walthard has formulated three rules for douching:

1. The disinfectant should come into intimate contact with the bacteria.

2. The solution used must be strongly positive, chemotactic.

3. The solution should not be so concentrated as to injure the mucosa and thus hinder leucocytosis.

The following of the writer's cases show the failure of douching as practised in one of the best of maternity hospitals:

Case A (see page 450) received HgCl_2 (1:5000) douches every few hours up to shortly before the collection of the first material, from which a streptococcus in pure culture was isolated. The organism, which was pathogenic for rabbits, was present throughout the rest of the patient's stay in the hospital.

Case C (see page 450) was douched up to and even after the first examination. Streptococci were found at the first examination and immediately after labor. The absence of bacteria in smears and culture at the second and third examinations suggests efficient douching, though it was of little ultimate service, for streptococci were found in the lochia.

Case B (see page 450). Streptococci were present in the vagina for six weeks, in spite of the douching, which relieved the abnormal macroscopical conditions present at the first examination.

The vagina and uterus of Case G (page 459) were also douched. Streptococci were present in the vagina. The second examination, made immediately after a thorough vaginal douching preparatory to uterine examination, gave no organisms, but by the third the streptococcus was isolated. The uterus was free from bacteria at the first two examinations.

These cases just cited, except possibly C, illustrate not only the failure of douching, but also suggest the aid it may give these organisms in becoming established in the vagina just before labor.

Another case received uterine douches on the fourth (with manual curetting), seventh, and thirteenth days of the puerperium. Cocci were present in the curettings, and on the seventh day, in spite of the continued vaginal douching, the secretion yielded a streptococcus, the staphylococcus aureus, and an unknown short ovoid bacillus. Pulmonary complications obscured the further significance of the case.

Both uterus and vagina of Case H (page 460), examined twenty-four hours after uterine douching, were free from bacteria; the day following a second douching the vagina was again free. This may be the result of douching, or there may never have been any organisms present.

As the value, positive or negative, of routine douching is only very exceptionally exhibited, it is not surprising that comparison of my series of cases receiving routine douches with those not so douched gave no definite results. However, the routine practice of a worthless procedure instituted to meet the demands of the few cases in which pathogenic bacteria occur, and the still smaller percentage of cases in which they incite disease processes, needs no further consideration.

An attempt has been made by the best obstetricians to diminish, and even eliminate, vaginal examinations. This is not always possible, but organisms thus introduced are cared for by the natural flushing of the tract from above downward quite as efficiently as by any superficial douche. Walthard believes the positive chemotactic influence of the amniotic fluid also a factor in purifying the tract.

The continued presence of streptococci through the last stages of pregnancy and labor into the puerperium is, in the event of injury to the mucosa or extension to the puerperal uterus, dangerous. Thus, if pathogenic bacteria are demonstrated in the vagina, if the vaginal secretion fails to eliminate them, energetic antisepsis is indicated.

Uterine Douching.—The puerperal uterus under ordinary circumstances is free from organisms and interference is contraindicated. Extraordinary conditions, however, arise in which pathogenic as well as non-pathogenic bacteria excite pathological reaction. The object of douching is to remove the bacteria with their products or to destroy or inhibit them when antisepsis is used. In the toxemias, septic and sapremic, the organisms, respectively pathogenic and non-pathogenic, are outside the body tissues. The clinical manifestations are the aggregated result of their metabolism, and are, provided the absorption is constant, proportional to its extent. Thus, douching in sapremia, by removing without danger quantities of organisms and their products, is most effective. The same is true of septic intoxications, but the organisms are pathogenic and may invade the predisposed tissues. The danger is therefore to be considered. It must necessarily be greatest immediately after labor and diminish as repair progresses.

The Case F may be interesting from this standpoint. The uterus, twenty-four hours after labor, was manually curetted, douched, and packed with gauze; the macroscopic findings at the time were negative; cultures and smears were not made until the second day. The clinical indications for this procedure were symptoms of a toxemia, pain and tenderness in the groin, and a tender fundus. The phlebitis which later developed healed; and, even in the event of its being primarily dependent upon the septic condition of the uterus, the removal—in point of fact, incomplete—of organisms in the uterus could have little bearing on this distant lesion, whereas the uterus at this period may be said to invite and foster infection. Though there are not sufficient data to definitely prove the curetting and douching at fault, its possibility should be carefully borne in mind.

The complete removal of the bacteria is not accomplished by the douche; the necrosing decidua affords more or less protection. They are destroyed or inhibited if the antiseptic fluids come in contact with them, but this cannot be regularly brought about. The complete elimination is accomplished by the processes of repair aided by drainage, artificial or natural. In septic infection the organisms have penetrated the tissues and are beyond the reach of any douche. The removal of quantities of organisms and their products which impair the resistance of the body tissues, locally and generally, may, where absorption occurs, prove beneficial. On the other hand, the douche in the uterus, as in the vagina, may impair the resistance of the tissues locally, and the removal of the excess of bacteria with their products may facilitate the growth activity of those organisms left—a point brought forward by Welch some years ago as applied to the general indiscriminate use of antiseptics and their effect in diminishing the natural protective forces of the body. Particles of detritus may contain and protect virulent organisms, especially when the weak solutions of bichloride, which do not penetrate albuminous material well, are used. These particles are carried into the cornua to the orifices of the tubes or other portions of the mucosa, where they lodge and, in the predisposed state of the puerperal uterus, find suitable environment. It is difficult to establish beyond question the relationship of douching to processes in the adnexa, but some gynecologists have substituted local applications and drainage for curettage with douching in treating the non-pregnant uterus. In a case of endome-

tritis the writer observed a unilateral salpingitis with distension of the tube develop after the usual curettage and uterine douching; the lesion, however, gave no symptoms. The available reports of fatal cases in which extension was by the tube are not complete as to the relationship of the douching; but, irrespective of this danger, there are cases in which the infection was carried into the puerperal uterus by the douche. Horrocks reports such cases, and Runge found it the cause of an "epidemic" of puerperal fever in the Charity Hospital, Berlin.

The following of the writer's cases illustrate the futility of uterine douching and some of the dangers that attend it.

The Case F, already mentioned, in which there was a pure streptococcus infection extending over five weeks with fatal termination, was curetted and at first irregularly douched. Later for two weeks the uterus was frequently douched without checking in the slightest the course of the disease. An abscess in the stump of a tube removed seven years before was made out shortly after the douching had been started; it might possibly have escaped the previous examination.

CASE E.—Another case of fatal (seventh day) pure streptococcus infection was curetted on the fourth day. The uterine douching on the fourth, fifth, and sixth days was accompanied by a continued lower temperature, but the pulse steadily increased and the rapid course of the infection was not affected.

A third case, G, though an exact diagnosis of the condition present could not be made, is interesting and suggestive. The normal course of the puerperium was disturbed on the seventh day by rise of temperature, and foul lochia relieved by creolin 0.5 per cent douches. Again, on the tenth day the temperature rose with remission to 103° F.—105° F., and was quite continuous for a week, when it gradually fell to normal. The spleen was enlarged, otherwise physical examination was negative and the patient bright. Malaria and typhoid fever were excluded by the blood examination and Widal reaction.

On the twelfth and eighteenth days of the puerperium the uterus was free from organisms. The vagina, however, contained streptococci and the mucosa was torn and covered with exudate; later, other organisms were associated with the streptococcus. During the course of the fever the uterus was twice curetted and frequently douched. Granted the case to be one of infection from the vagina, uterine interference was uncalled for and dangerous, though this could not be known from clinical data, which pointed to the diagnosis of toxemia or infection. Lesions of both adnexa were discovered by vaginal examination before discharged as cured. The absence of anything to suggest infection until the seventh day, and

the thorough examinations which failed to find these tumors, point to the curetting and douching as the most rational explanation. But the relationship of these lesions to the continued fever, also the nature of the process, whether of bacterial origin or not, is wholly uncertain.

In Case H (see below) a chill with rise of temperature followed immediately the uterine douche, and some five hours after another uterine douche the same reaction took place. Thus these are at least suggestive.

In Case D (see page 451), a case of infection with symptoms of pyemia, the douching of the uterus had no appreciable effect, good or bad.

Value of the Diagnosis of Sapremia.—There is too great a readiness to ascribe disturbances of temperature and pulse, with more or less pronounced subjective symptoms, to sapremia, and the tendency to distinguish by clinical data alone sapremia and septic intoxication is irrational. Essentially, sapremia is a toxemia, and such distinctions require bacterial analysis. Von Franqué not only considers this clinical diagnosis impossible, but believes sapremia a rare condition in the puerperium. The results of Burckhardt's work do not agree with this general statement. However, in the early part of the puerperium he found the uterus usually free from bacteria, but later—the eleventh day—the converse obtained. Absorption by the tissues is better shortly after labor, but the drainage and the products of bacterial growth are not as apt to be retained.

The condition was not found by the writer in any of the cases examined. Besides the Case G, just mentioned, two others, clinically diagnosed as sapremia, were examined, and the uterus was free from organisms in each instance.

Case I was seized, on the second and third days after normal dry labor and secondary hemorrhage, with chills, followed by temperatures of 104° to 105°, with increasing gastric and abdominal symptoms. Later the diagnoses of hemorrhagic hepatitis, perisplenitis, and cystitis were established and the case thus cleared up. On the second day following a chill five cubic centimetres of blood, distributed in media grown aerobically and anaerobically, was sterile. The vagina and uterus at this time were free from organisms.

Case H, diagnosed clinically as puerperal sepsis, developed, on the sixth day after normal labor, a rise of temperature, which continued, though irregular, for some twelve days in spite of frequent uterine douching.

The uterus and vagina were free from organisms on the eighth day, and the latter again on the following day. Subsequent infection may have occurred and the case thus finally entitled to the clinical diagnosis.

The accurate diagnosis of sapremia and septic conditions is essential, for in the one little danger and great benefit attend the douching, whereas in the other, unless the sinuses of the uterus are securely protected by granulation tissue, irreparable damage may be done.

Bacterial examinations are of no service in distinguishing septic intoxication from infection, and at the first stages of the latter the clinical data are often inadequate.

The risks of douching are to some extent lessened where organisms of low virulence are encountered, but the determination of this factor, however important, is quite obscure. Mild or superficial infections may be benefited by douching, but the other side of the problem is also to be considered: the milder the infection, other things being equal, the better is the body able to throw it off.

It is quite evident that bacterial examinations should always precede and determine intrauterine douching; in sapremia the indication is apparent; in septic intoxications and infections it is decidedly a questionable procedure.

Constant irrigation of the uterus, introduced by Schücking, with sterilized or tap water has been practised. Manseau, by this method, reports cures in four cases of severe infection which regularly resisted other treatment. The principles and dangers of this procedure are much the same as douching, though it has the advantage of being more radical and complete.

While douching in general has been so severely criticised and discountenanced, it is, with proper selection and execution, most strongly indicated. But the wholesale, half-thorough, and careless application, irrespective of existing conditions, which characterizes routine douching, cannot be sufficiently condemned.

Surgical Indications.—Radical surgical interference in the puerperium has of late advanced to a place of importance, but it is necessarily limited to the infections and contraindicated in the pure intoxications where the organisms are outside the body tissues. The differential diagnosis of mild infection is quite obscure. The course and extension of a virulent infection is frequently very rapid; the lymphatics and blood vessels of the broad ligaments, tubes, and peritoneum are involved in quick succession. The object of surgical procedure being the complete removal of all the infiltrated tissues or the establishment of free drainage of those infected parts beyond the reach of the knife, it is evident that there are cases, on the one

hand, not requiring operation, whereas in others the process has been perhaps too rapid. Between the two extremes is the mean where good results may be expected. From this standpoint the two fatal cases of streptococcus infection are of interest.

Case E presents a virulent infection extending rapidly to the peritoneum and general septicemia, with fatal termination on the seventh day of the puerperium. Material was collected on the third day, the streptococcus pyogenes found in pure cultures. The mucosa of the uterus, the ligaments and adnexa, at autopsy were negative. Little, therefore, could be expected from surgery. The only possible way of determining rational indications for cases of this sort lies in having at the very earliest date the bacterial examination proving the presence of pathogenic organisms in the uterus, and being thus ready to act the moment the clinical symptoms demand operation. But this is rarely practicable.

Case F represents the mean. Material was collected on the second day, and the presence of streptococcus pyogenes was very early established by culture as well as inoculation. The continuance and progress of the clinical symptoms, the futility of the douching, pointed to a very serious prognosis unless radical measures were instituted. Four weeks later the patient was transferred to Roosevelt Hospital for operation, which was not thought feasible. Death followed some ten days later. Thus the indications for operation were early apparent, and comparison of the clinical report with the autopsy findings would lead one to expect excellent results.

Blood cultures are only very rarely of service as a basis for indication or contraindication, as well as diagnosis, as they are usually sterile. The work of Pawlowsky and others shows that, in general, bacteria rapidly disappear from the blood following intravenous inoculations, and only reappear shortly before death. The blood cultures from the fatal cases and one from a suspected case were free from organisms.

In those cases of local lesions—abscesses—the wisdom of operative procedure is not disputed.

Hysterectomy is the most radical of these measures, and even the gravity of this operation, either from immediate dangers or remote developments, ought not to balance the vital problems surrounding so many of these puerperal infections.

The Use of Antistreptococcus Serum.—In view of the different kinds of streptococci and the variations in their

virulence, the production of special antitoxins must be uncertain and of but limited application. Antitoxins have been claimed by a number of workers, notably Marmorek, Roger and Charrin, Petruschy, Aronson, and Van de Velde. The methods in principle are the same. The virulence of a streptococcus in its relation to a certain susceptible animal is raised. Products of this organism, or, better, non-fatal doses of the living cultures, are exhibited; the protective power is thus progressively increased in these animals; the serum is then obtained from them. The increment in virulence of a streptococcus culture may be inverted toward some other animals—Knorr, Petruschy. Marmorek, therefore, selected the horse, sheep, and ass, particularly the latter, as reacting in the best analogy to man. He considers his serum curative. Bar and Tissier believe it immunitive only. They report seven cases of streptococcus infection, three cures and four deaths. Their three standards of dependence for the serum are:

1. The degree of immunization reached by the animal when the serum is taken.
2. The virulence of the streptococcus infection.
3. Stage of the disease at which the serum is administered.

Marmorek employed the serum in some 46 cases of erysipelas with good results. Sixteen cases of puerperal infection, 7 pure streptococci recovered; 3 streptococcus and bacterium coli communis mixed infections died; of 5 mixed staphylococcus infections, 2 died; in 1 pure bacillus coli communis infection the serum had no effect. He thus limits its indications to the pure streptococcus infections, in which it is of value.

Petruschy found the Marmorek serum inactive, but that which he produced himself was effective. Aronson found that the streptococcus serum would not keep like the diphtheria serum. This may possibly account for some of the variable results and the effectiveness of sera in the home laboratory so generally claimed by these investigators. The variability of the organisms tested has also been considered a factor.

The significance of these reports is quite relative to the accuracy with which the diagnosis of infection as distinguished from intoxication was made, and the percentages are wholly so dependent. No sooner had these few positive reports reached the medical public than the newly discovered talisman was applied to any infection, irrespective of its nature, and many cures thus effected. One physician made it a routine in all his obstetrical practice. Results of this sort are

incorporated with the discussions of the subject, without any attempt having been made to place them in relation to the bacterial etiology or the pathological conditions present. Such reports are not only worthless, but a positive hindrance to the establishment of the proper indications.

Little danger may follow the use of the serum, but Bar and Tissier found the Marmorek product deleterious. Boucheron, who used it regularly in rheumatism, observed local and general reactions from injections of one cubic centimetre.

Whatever the future may develop, the indications are for the present necessarily limited to pure streptococcus infections in localities where reliable sera may be had and some relationship between the organism causing the disease and the special serum obtains.

SUMMARY AND CONCLUSIONS. *Technique.*—By careful technique, uncontaminated specimens of the secretions from the uterus or any portion of the vagina may be easily obtained and in a convenient form for examination. Considerable time is required to accurately differentiate all the pathogenic species which have been found in these secretions. From a practical standpoint, however, owing to the nature of the comparatively few organisms more commonly present in puerperal infections, a sufficiently accurate diagnosis may be quickly and readily made.

Vagina.—The acid vaginal secretion during pregnancy almost always contains living, though for the most part harmless, micro-organisms which are constant or usual and temporary or casual in their occurrence. Recognized pathogenic species are only occasionally, and usually temporarily, present. Pathological reactions are rarely excited by these organisms, which only become harmful on entrance to the uterus or through injury to the vaginal mucosa. Though certain gross and microscopical appearances of the vaginal secretion indicate pathological conditions, they only suggest with a variable degree of probability the presence or absence of pathogenic organisms. This can only be accurately determined by bacterial examination. Exceptionally, pathogenic bacteria may remain alive and maintain their virulence in the vaginal secretion during pregnancy and through labor. Since in the lochia the conditions for the growth and maintenance of virulence of the pathogenic organisms are more favorable and the puerperal uterus is more exposed and vulnerable, those cases in which the natural resources of the vagina have failed and the bacteria persist require energetic antiseptics.

Vaginal Douching.—The ordinary flushing by a douche does not insure a sterile vagina. This can only be accomplished by the same methods, with obvious qualifications, which are used for the skin and hands. The simple vaginal douche, with possibly a few chance exceptions, is not even an aid to the complete elimination of pathogenic bacteria; on the contrary, the natural protective resources of the vagina are thereby impaired, so that these organisms are better able to establish themselves. Furthermore, pathogenic organisms may be carried into the vagina by careless manipulations, and the weak solutions usually employed are not sufficient protection against this error.

It is therefore evident that *routine vaginal douching* before and after labor is irrational, ineffective, and may also prove dangerous.

Uterus.—The alkaline secretion of the uterus, including the cervix, under normal conditions, is free from bacteria, but not infrequently organisms have been found in the cervical canal, and even in the uterus, without exciting any apparent reaction in the tissues. The pregnant and puerperal uterus is also usually free from bacteria, but after the first few days of the puerperium organisms are more often present in the uterus. Occasionally bacteria invade the uterus from other parts of the body.

The *pathological reactions* excited by bacterial growth in the cavity and tissues of the puerperal uterus, as well as the more remote manifestations in other parts of the body, are the result of either a toxemia or an infection. But apparently all toxemias of the puerperium are not bacterial, for it is believed that the changes in the exudates, blood clots, etc., occurring independently of the growth of micro-organisms, may give rise to products which on absorption induce an intoxication.

The streptococcus pyogenes is the most frequent and serious of the pathogenic bacteria associated with puerperal infection. The staphylococcus, bacterium coli communis, gonococcus, and bacillus aerogenes capsulatus are also important. The disease processes and lesions induced in the uterus by bacteria may be modified and even determined by the degree of contraction of the uterus, which may favor or retard invasion, and the condition of its tissues, which may either favor or not the growth of the micro-organisms; on the other hand, the processes and lesions may be greatly influenced by the nature and virulence of the bacterial species.

The different forms of toxemia, and also infection, in the

early stages when the proper methods of treatment should be instituted, can only be distinguished by bacterial examination. The clinical data, at first insufficient, later often suggest more or less accurately the conditions present.

The *uterine douche*, like the vaginal, is inefficient, and its indiscriminate use may do serious harm. In the toxemias which are not due to pathogenic organisms the results of uterine douching are immediate, effective, and attended by little danger. In the intoxications and infections excited by pathogenic organisms the processes may be aggravated or disseminated by the douching. The danger of this is greatest in the first days of the puerperium, when the exposed tissues and sinuses offer the least resistance.

Though the diagnosis of severe infection in the first stages is often obscure, the presence of pathogenic bacteria in the uterus may be established by bacterial examination, and then, as the clinical manifestations develop, indications for *radical operation* may be more accurately determined early in the course of the disease processes. The indications and contraindications for the various forms of curettage are practically the same as those for uterine douching.

Antistreptococcus sera have been produced by several investigators, but, with few exceptions, the indefinite data concerning its value have not been corroborated; its use, particularly in puerperal infections where organisms other than the streptococcus are often present, is therefore irrational and ineffective.

Routine Management of Cases.—From the practical standpoint it is evident that the routine management of cases should be freed as far as possible from all procedures which interfere with the natural resources of the body; for these, in the vast majority of cases, are sufficient protection against the invasion of pathogenic bacteria. In the few exceptional cases requiring interference this should be determined and directed by the bacterial examination.

112 WEST FIFTY-FIFTH STREET.

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ALEXANDER'S OPERATION :

A METHOD OF PICKING UP WITH EASE THE ROUND LIGAMENT AT THE
EXTERNAL ABDOMINAL RING.¹

BY

LE ROY BROUN, M.D.,
Assistant Surgeon to the Woman's Hospital,
New York.

(With two charts.)

ALEXANDER'S operation has many enthusiastic supporters. This confidence chiefly exists with those who have done the operation frequently (see the excellent clinical results obtained), and by reason of long practice approach it with a certainty of isolating a ligament amply sufficient to retain the uterus in an anterior position and to give the utero-sacral and broad ligaments an opportunity to regain their tone.

I know of no operation in gynecological surgery in which

¹ Read before the Woman's Hospital Society, January 25, 1901.

minute detail is of so much importance as in the performance of this operation; nor do I know of any in which the recognized surgical ability of the operator is of so little assistance to him in his first few cases, provided he follows the ordinary surgical methods usually laid down.

During the experience of the last eight years, in which I have done some one hundred and twenty-five of these operations, I am convinced that the chief difficulties are as follows:

1. The ordinary method in use of incising and retracting the various layers until the external oblique aponeurosis is reached.

2. The frequent mistaking of the superficial fascia (a layer midway between the skin and the muscle) for the external oblique aponeurosis.

3. The tearing away and destroying the exposed portion of the ligament before it is recognized, as it lies between the pillars of the external abdominal ring.

Since 1892, when I first began doing Alexander's operation, my experience of the first four years was that of most operators commencing to do this work. At times I had difficulty in finding and isolating the ligament, lacerating the surrounding tissues in its search, and occasionally having suppuration as a result. In a few instances the ligament obtained was so small as to be almost worthless as a means of holding the uterus forward.

With increasing experience the readiness with which the ligament was picked up and isolated became more certain, yet occasionally an operation was encountered in which much time was consumed in the search. These instances chiefly occurred in patients with large external abdominal rings or where the overlying layer of fat was unusually thick.

During this period I followed the method as laid down by authorities, in continuing the incision through the layers of fat down to the aponeurosis of the external oblique, locating the external ring by touch, and withdrawing the ligament after incising the intercolumnar fascia.

In attempting to follow this vague yet apparently clear method of procedure the operator in his first few cases meets with many discouraging difficulties, and it is only after much experience that he feels thoroughly at home with the operation and sure of his ability to isolate a ligament that will be of service.

To expose the external abdominal ring through a clean-cut

incision, and to secure and withdraw the ligament through a ring only indifferently seen, though apparently simple, is yet a difficult thing to do with certainty in every case. Especially is this true by the ordinary method of incision and retraction.

Dr. Alexander, in a paper before the Ninth International Medical Congress upon this operation, impresses on the reader the likely possibility of going wide of the mark when following this method of dissection while the incision is being held open by retractors. He states that through unskilful retraction the direction of the incision is so deflected that at times the aponeurosis is reached almost on a level with the umbilicus. I have myself seen a number of instances of wide divergence from the point of search (the external ring). To remedy this, Dr. Alexander urges the lightest retraction of the wound. Only with a skilled assistant is this possible.

For an operator to follow the other method, of cutting directly down on the ring with only the sense of touch as a guide, requires long experience and practice. Even with this experience much embarrassment is at times occasioned by the superficial fascia lying midway between the skin and the aponeurosis. When the fat underlying this is thin, the ring can be easily felt, and the error is made of supposing that the external oblique aponeurosis has been reached. This mistake is not uncommon. With one familiar with the operation this error is quickly recognized, the incision is deepened, and no damage is done. With less familiarity the operator continues the vain attempt to secure the ligament in the fat protruding from what he thinks to be the external ring; much laceration of tissue occurs in this search before he recognizes his mistake, or else the operation may be abandoned in disgust.

A frequent performance of Alexander's operation led me to devise during the summer of 1896 a technique which I have uniformly used since this time. By it the operation is one of ease and certainty. Of necessity it differs from that of other methods only in minute detail, which is, after all, the one essential for a successful and easy performance of this operation.

The essential of the technique is that the means used to retract the lips of the wound during the dissection shall be of such a character that when applied by the operator it will remain where placed until removed. Hemostatic forceps are most serviceable for this purpose. When the bottom of the

wound is caught up with a pair of forceps on each side and the dissection continued between them, the direction of the incision is under control and any deflection caused by unskilled retraction can be avoided. The incision is kept at the same depth through the length of the wound, and can be with certainty directed over the external ring. The operator is also enabled in this manner to do the dissection at all times under the eye. The ring is exposed rapidly and with certainty through a small incision without the much-to-be-avoided searching and attendant mutilation of the superimposed tissues, this hunting and delayed finding of the ligament being so often the cause of the suppuration frequently complained of by some operators.

The method is as follows:

In the ordinary way an incision from an inch to an inch and a half is made parallel to Poupart's ligament. The lower angle of this incision extends a fraction of an inch below the pubic spine, the greater length extending above. This incision is continued rapidly through the skin and superficial layer of fat, no attention being given at the time to the capillary bleeding, which occasionally is quite free. If this does not stop within a few seconds under pressure, torsion is applied to the small vessels persisting in oozing.

The wound being dry, a portion of the tissue near its bottom is caught up with a pair of hemostatic forceps, and a similar portion is picked up opposite to the one in place. By drawing on these lightly the intervening tissue is put on a sufficient tension to rapidly and easily divide it. The forceps remaining in place are lightly used as retractors, and the tissue near the bottom of the now deeper incision is again caught up in a similar manner with forceps. The pair previously applied are now removed, and the tissue between those in place is divided as before. Continuing in this way, the tissues are rapidly divided throughout the length of the wound down to the aponeurosis of the external oblique.

The operator is made aware of his approach to this aponeurosis by entering a layer of very loose connective tissue. This layer is immediately above the external oblique, and through it the glistening fibres can be readily recognized. This thin layer, as in other instances, is divided throughout the length of the incision.

During this dissection any persistent bleeding should be checked by torsion, since the surrounding tissues will be-

come stained and prevent a ready recognition of the various layers.

In the process of dissection I desire to again call attention to the superficial fascia already referred to. This is of varying density and overlies the aponeurosis of the external oblique; it is separated from it by a layer of fat of varying thickness. This fascia is a point of stumbling, at least occasionally, of all of us. If the underlying fat is not abundant the external ring can be felt through the thin layer; the error is made of supposing that the ring has been reached, especially if the tissues are stained by oozing and not easily recognized. Time is lost and tissues mutilated in discovering the mistake, unless this layer is borne in mind.

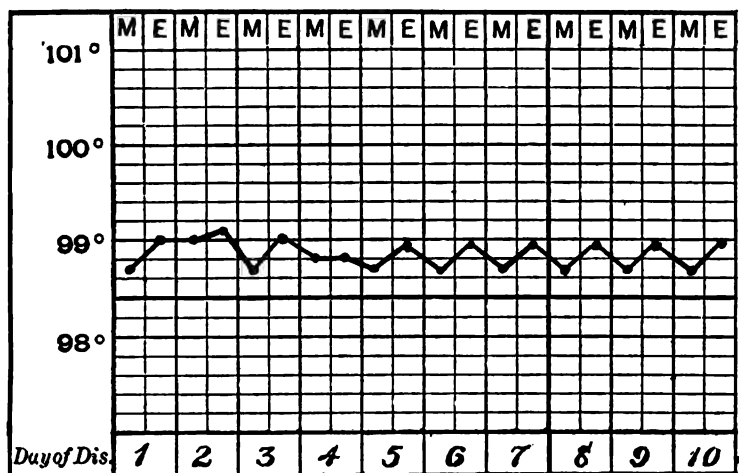
The fibres of the external oblique being brought plainly in view through the entire length of the incision, the wound is held open by retractors and the external abdominal ring is located by sight, both pillars of the ring being brought plainly in view. A few light sweeps of the knife are made around the pillars of the ring to separate the connective tissue. The intercolumnar fibres are divided and the projecting mass seized with *blunt-toothed* forceps.

If ordinary forceps are used with the usual sharp teeth and the necessary traction applied, they will, on account of the muscular structure of the ligament, almost invariably cut away that portion between its jaws. This accident is much to be deplored, since by it the pubic attachment of the ligament may be destroyed, introducing a difficulty in its isolation that did not exist.

It is only necessary to cut down with a file the sharp edges of any pair of hemostatic forceps to make them serviceable for this purpose. The forceps are not thus impaired for other use.

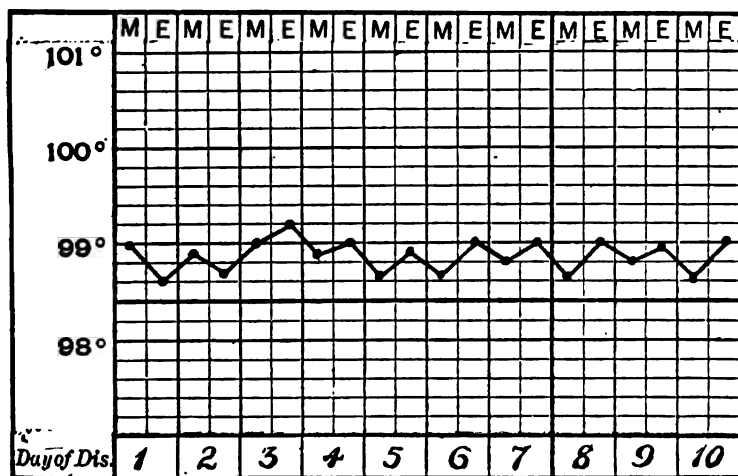
The mass between the jaws of the forceps consists of round ligament, connective tissue, very frequently some fibres of the external oblique fascia, and occasionally the genital branch of the genito-crural nerve. This nerve, in the majority of cases, however, will be found accompanied by its vein below and to the outer side of the forceps. The nerve being separated and held aside by the loop of a ligature, the ligament is in almost all cases by steady traction readily withdrawn to the desired length. When there is any difficulty it is due to either a few fibres of the fascia caught up with the ligament, which can be easily recognized by their threadlike feel and divided, or to some muscular fasciculi within the canal itself, which will give way under the steady, constant tension.

The preservation of the nerve, and the subsequent care taken not to include it within the sutures, I think of importance.



Composite chart of ten unselected consecutive cases of Alexander's operation.

Since taking this caution the annoying neuralgic pains so frequently spoken of as following Alexander's operation have not been noticeable.



Composite chart of ten unselected consecutive cases of Alexander's operation with repair of the cervix and perineum.

If there is a diseased condition of the cervix and a tear of the external parts, both are repaired at the same time. The

recovery is always athermic and without pain, unless from perineal sutures, if used. I append two composite charts for inspection (see charts).

So easy and certain is this method of a satisfactory result that members of the house staff, in doing this operation for the first time, have no difficulty in picking up and withdrawing the ligament. At no time have I found the ligament absent, nor have I ever found it emerging from any other place than through the external abdominal ring.

If the pubic end of the ligament should be torn away before it is isolated (an accident now of extremely rare occurrence with me) and its free end cannot be picked up, I think it preferable to continue the incision beyond the internal ring, lay back the several layers, isolate the last ligament, and do a Bassini operation, instead of splitting up the ring and lacerating the underlying muscle in the search for the lost end. There is less likelihood of having a hernia follow.

The size of the ligament withdrawn should in every instance be amply sufficient to sustain the uterus with certainty in a forward position. The thin, attenuated ligaments obtained in a few instances among the first few operations, I am now confident, were split in the search, the remainder not being isolated.

The ligatures used to fix the ligament in its new position are either fine black silk freshly boiled or kangaroo tendon. Chromicized catgut has not given satisfaction on account of the uncertainty of the length of time it will last.

The technique as described above consists of minute detail, which, with a little practice in doing, makes the operation one of the simplest in surgery. Each case is approached with an absolute certainty of an easy termination.

In closing, I wish to bring together under a few heads what I regard as important in this operation:

1. Make a clean-cut incision down to the aponeurosis of the external oblique muscle—reaching the aponeurosis rather to the inner side of the ring than directly over it, thus affording an easier recognition of your location.

2. Bear in mind the presence of the superficial fascia, and that its density varies from such a thinness as to be hardly recognized to one of such thickness as to be readily mistaken for the aponeurosis not yet reached. The fibres of the aponeurosis are in large bundles, all running in one way. Those of the superficial fascia are finer and more closely woven.

3. Expose to a clear view both pillars of the external abdominal ring when distinctly marked. If indistinct, as in small rings and in instances of dense intercolumnar fascia, expose clearly the anatomical position. With this in view the pillars and ring can be recognized by touch.

NOTE.—A few days before reading the proof of this article I examined Dr. Skene Keith's work on "Operative Gynecology" (1900). I find that he performed Alexander's operation in the same manner as above described, with the exception of his cutting the nerve. I was not previously aware of Dr. Keith's method of operating.

ON THE IMPORTANCE OF PRECISE DEFINITIONS OF DIPHTHERIA IN THE VALUATION OF ANTITOXIN THERAPY.

BY

ADOLPH RUPP, M.D.,

Fellow of the New York Academy of Medicine; Member of the New York County Medical Society; Member of the German Medical Society of New York; formerly Aural Surgeon to the New York Eye and Ear Infirmary, etc.

PROFESSOR OSLER, of Johns Hopkins University, in the Sunday issue of the *New York Sun* for February 3, 1901, says: "The accumulation of statistical evidence, even when all allowance is made for doubtful methods of compilation, shows that the aggregate mortality of diphtheria has been reduced fully fifty per cent since the introduction of antitoxic treatment by Behring in 1892."

Now, what is diphtheria? Before the year 1892 all diagnoses of diphtheria are clinical diagnoses. After 1892 no diagnosis of diphtheria is certain to the minds of scientific physicians unless the presence of the Klebs-Löffler bacillus has been found to coexist among clinical signs. Thus the conception of diphtheria entertained and acted upon prior to 1892 was certainly different from that which is now taught as being diphtheria. Prior to 1892 we all said with Brettonneau that diphtheria is a disease two thousand years old, and that many writers, from Aretæus onward, describe the familiar malady, although their drawing may not always have been altogether correct. Prior to 1892 diphtheria was characterized by three fundamental facts, (1) a sore or inflamed throat with (2) pseudomembranous deposits, and (3) a variety of vital depressions. All other characteristics were variable and secondary, such

as croup, heart failure, palsies, etc. And now, after or since 1892, with some writers—not by any means with all—diphtheria, as such, has become not even a toxemia, but the mere presence of the Klebs-Löffler bacillus in the throat.

In the early part of the nineteenth century Sir Gilbert Blanc wrote in his "Medical Logic": "A large proportion of all the false reasoning and controversy which has existed among the learned and the unlearned of all ages has arisen from the want of a precise definition of words." On the other hand, a Philadelphia bacteriologist, at the close of the Wonderful Century, has made light of the necessity of definitions, because, he says, they are easily made. Such an assertion is offhand and arbitrary, besides being contrary to facts. History in all departments of life is but definition in the making. Carlyle certainly was more than a mere rhetorician when he said: "When the right name itself is here, the thing is named henceforth. The thing is then ours and can be dealt with." Prior to 1892 we had the thing and the name; but since 1892 we have been refining on the thing and more or less unconsciously making a new thing, but stoutly keeping the old name which had labelled other things. The clinical definition of diphtheria covered cases that the new or bacteriological definition cannot take cognizance of, and the new or bacteriological definition counts cases which had before 1892 escaped the eye of the clinician.

Prior to 1892 clinical phenomena and morbid anatomical data formed the basis of statistical compilations of diphtheria morbidity and mortalities. Now bacteriological observations, experiments, and speculations influence such tabulations and are considered of primary importance. Some observers are satisfied to call a person a case of diphtheria if the Klebs-Löffler bacillus is harbored in the pharynx or nose; others demand that the Klebs-Löffler toxin must have exerted its effects; and still others that only those have diphtheria who show signs of throat inflammation, with or without pseudomembranes, but plus the Klebs-Löffler bacillus and the toxic evidences. Since 1892 the conception of diphtheria has been gradually becoming more and more specific and definite, and, though related to the old conception, quite distinct and altogether different from it.

How do these two different conceptions work practically when statistical comparisons are made of diphtheria before and diphtheria since 1892? Let us see. One epidemic is as

good as another for purposes of illustration, so we quote Creighton ("Epidemics"). In 1858 one of the worst epidemic centres in England was in and around Spalding, a market town in the fen district of Lincolnshire. A thousand cases were counted in and near Spalding, many of them mild, a small ratio of them gangrenous and mortal. One practitioner had 200 cases and 5 deaths; another, 200 cases and only 2 deaths; while another had 160 cases and 17 deaths. Such was the character of one epidemic. The aggregate death rate was comparatively small, and in no sense justifies the amazing fatalities insisted upon by "believing enthusiasts" who claim great mortalities during the years prior to 1892 as being quite of common and general occurrence. Take another epidemic. In the State of Michigan during the year 1879 the aggregate death rate for the whole State was about 10 per cent. And Jacobi has taught us that there have been times and places when the death rate has been 95 per cent. Thus the death rate during the years antedating 1892 have varied from a 2 per cent to a 95 per cent death rate. But striking an average between these extremes does not justify the conclusion that the aggregate mortality rate for diphtheria before the introduction of the antitoxin method of treatment was about 50 per cent. Far from it.

Medical men are just as human as any other class of men, and interested motives affect them as they do all other classes of men. If this weakness is to be deplored, it must not be overlooked in our studies of figures and the history of diseases. Any medical student who has had a considerable experience in the observation and treatment of diphtheria during years before and after 1892, has had opportunity enough to justify the reflection "that similar clinical conditions are not diagnosed as diphtheria by different medical men." This reflection holds for both periods. I know of instances where the practitioner diagnosed diphtheria, injected antitoxin, and, in his own estimation, got excellent results, when the trouble was not clinical nor bacteriological diphtheria, but herpes of the pharynx. The doctor had acted according to the scientific teachings of the day. He had taken nothing for granted, he had not waited for a bacteriological confirmation of his diagnosis, but straightway injected *his* dose of antitoxin. No harm resulted. The family was convinced of the grand utility of antitoxin. The child made a good recovery. Among other throat inflammations that may and are mistaken clinically for

diphtheria are pseudodiphtheria, membranous croup according to some authors, muguet, putrid sore throat, follicular tonsillitis, influenza throat, acute syphilis of the throat, erysipelas, scarlatinal inflammation, etc. When the diphtherias are sporadic in their manifestations, these mistakes may not be made so frequently as they are when the disease assumes epidemic characteristics. General excitement, expectant attention, a heightened sense of responsibility concerning the general or public welfare, and other factors, may make many practitioners see things more glaringly than they really are during an epidemic uproar.

In times prior to 1892 cases not truly diphtheria no doubt got into statistical tables as diphtheria, but in what proportion it is impossible to determine. However, in all probability only very few did so, because the pseudomembranous deposit was the differentiating sign. But since 1892 it is possible that as many, if not more, cases not specifically diphtheritic have become statistical matter among true diphtherias, because now even a sore throat under suspicious circumstances is treated like a diphtheria case on grounds of its possibly being true diphtheria. And if such possible instances do not often get into official statistical tables, one has reason often enough to know that they are not so uncommon as not to have considerable effect in transmuting possible assumptions into working realities in the minds of not a few practitioners.

When it is said, as though the assertion left no room for doubt, that the aggregate mortality for diphtheria has been reduced 50 per cent since the use of antitoxin in the treatment of diphtheria in 1892, on what basis is the compilation made that justifies the assertion? And assuming the assertion to be true, what are all the doubtful methods of compilation that have been granted or allowed? Are they matters of well-determined knowledge on which the 50 per cent mitigation is based, or is this optimism based on a "vague and partial conception of things which satisfies many minds"? Our ability to diagnose a disease depends on the definition of the disease that has been formulated. And our definition of a disease is commensurate or equal to our knowledge of the disease in question. Our knowledge of diphtheria before 1892 was imperfect, but we had a clinical definition of the disease, and we had signs by means of which we diagnosticated the trouble. All knowledge is imperfect, and all definitions are only tentative, and all our methods of diagnosis are open to improve-

ment. Since Klebs and Löffler discovered the bacillus that bears their name, our knowledge of diphtheria has been added to; but ever so much more remains to be found out. Scientists have disputed about the importance of the Klebs-Löffler bacillus in the induction of clinical diphtherias. Morphologically, innocuous and virulent bacilli seem to be alike. When they are the cause of mild toxins we are told that mild epidemics are engendered, and when their poison is virulent severe epidemics result. We are also told that mild bacilli may become virulent. The presence of Klebs-Löffler bacilli is suspected by means of old-time clinical signs and newly-made suspicions of a speculative or inferential character. If the symptoms are benign, we are to presume that the bacilli are so; if the symptoms are violent, we must assume the bacilli to be proportionately virulent. We are called upon to reason from effects back to the Klebs-Löffler bacilli and proclaim them adequate causes in any event. Some clinical scientists tell us that the Klebs-Löffler bacillus alone and by itself in the throat is no source of great harm, but when associated with other bacteria, like streptococci and other cocci, but especially with streptococci, it readily picks up energy and works vigorously toward vicious and deplorable ends. Other clinicians, again, who publish a large experience, assure us that the presence of the streptococci in cases of Klebs-Löffler diphtherias, mild, moderate, and severe, is so uniformly common that no prognostic importance is to be attached to the presence of streptococci, but that the Klebs-Löffler bacilli are the true and only evil-doers in cases of diphtheria.

Are these scientific differences of opinion to be classed among the causes of so-called doubtful methods of optimistic statistical compilation? All the bacillary knowledge that the practitioner can get from the bacteriologist fails to help him to explain the differences in the run of his cases. All the bacillary knowledge that the practitioner can get from bacteriologists fails to help him to understand why during some epidemics the morbidity is great and the fatality is not great, or why when few are sick the fatality is great (see News-holme's "The Origin and Spread of Pandemic Diphtheria"). Are these facts also allowed for as a basis in the doubtful methods of statistical compilations that affirm a 50 per cent mitigation of diphtheria mortalities before and after 1892? We know as a fact that diphtherias prior to 1892 were at times mild, at other times severe and appalling. History and sta-

tistics prove this. The literature of diphtheria since 1892 demonstrates that diphtherias have been mild in some places and at other places severe. At New York the mortality rates under serum therapy have pleased some "enthusiastic believers," and they have quoted them and favorable statistics from other cities to give a basis to their faith; but the serum statistics furnished by Dr. Welch at Philadelphia they ignore. Serotherapists are optimistic because they keep turned to the bright side of the question. When we read and listen to some bacteriologists, and take in what some clinicians say, one is often puzzled as to how much is fact and how much is more or less questionable, or how much is valid speculation. This is due to a lack of precise definition, and heavily-weighted assumptions that are pressed into service where facts cannot be had. There are some practitioners who trust their instincts or intuitions where facts are wanting, rather than speculate with unknown quantities and illusory qualities. They are willing to accept the laboratory definition of bacillary diphtheria, and to utilize the specific antitoxin calculated to antagonize or eradicate this special or specific form of diphtheria. But the practitioner is not ready to say, and act accordingly, that bacillary (Klebs-Löffler) diphtheria is the diphtheria he is called upon to treat in every-day practice. Some practitioners administer antitoxin from time to time in certain cases; but they are not enthusiastic over the results that follow, simply because their way of dividing and defining their cases is clinical, and must be so. Their cases are diagnosed on a clinical basis, and so is their treatment; and in the clinical treatment of diphtheria there is much more to be thought of than one specific bacterium and its specific toxin and antitoxin. And it is this element of clinical plethora that makes many clinicians or practitioners look upon the Klebs-Löffler bacillus and its toxin as being specific but inadequate conceptions of the disease, and antitoxin consequently an inadequate remedy for clinical diphtheria.

406 WEST THIRTY-FOURTH STREET;

THE TREATMENT OF PROLAPSUS UTERI.¹

BY

E. E. MONTGOMERY, M.D.,
Philadelphia.

In order to discuss the subject intelligently it is necessary to briefly consider the causes of the displacement. The causes of prolapsus uteri may be divided into three classes: (1) those which produce decreased support; (2) increased weight of the uterus; and (3) increased abdominal pressure. Either one or all of these classes may lead to the development of the displacement. Decreased support generally results from a lesion of labor, and may be a more or less extensive laceration of the pelvic floor. In this lesion the perceptible laceration may have been very slight, while the tissues have been pushed off from their attachments, leaving a sagging of both the anterior and posterior vaginal walls, or submucous lacerations of the tissues may have occurred without any break in the external layer. The vagina may have been torn off from its lateral supports and hang only by its attachment to the cervix, dragging upon the uterus rather than taking any part in its maintenance. The increased weight of the uterus arises from subinvolution, from growths in the uterine walls, and from chronic inflammation of the organ. It is almost always associated with the lesions which have produced decreased support. In patients who suffer from such conditions, the discomfort in taking exercise results in increased deposit of fat in the omentum and mesentery. This increase of adipose tissue causes an increased intra-abdominal pressure. The increased pressure may also be aggravated by abdominal growths.

From time immemorial various procedures, mechanical and otherwise, have been instituted for the purpose of pinning up or maintaining the uterus in its normal position. We will not take your time for the discussion of the various mechanical devices that have been advocated. The earlier surgical operations consisted in attempts to narrow the vaginal outlet and most frequently were operations upon the perineum. Such

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, January 17, 1901.

operations were of but little value, as the still heavy uterus rested upon the newly united tissues, to be in a short time again driven through.

The plastic operations upon the anterior wall of the vagina afforded some advantage, however, but, as they were mostly denudations of the mucous surface, the cicatricial bands and bridles thus produced were not very resisting. Any operative procedure to be successful must aim to overcome the causes which we have named as productive of the displacement. For such purpose amputation of the cervix, with plastic operations upon the anterior and posterior vaginal walls, has been practised. These operations decreased the weight of the uterus and narrowed the outlet, but, as performed, they did not obviate the difficulty which arose from the vagina having been pushed away from its fibrous attachments, which permitted it to be driven through the narrowed canal by the intra-abdominal pressure. In slight displacements the retraction of the anterior vaginal wall, which is accomplished by an incision through the vaginal portion of the septum; the separation of the vagina from the bladder; where necessary, the tucking-up of the latter by buried sutures; the excision of a section of the vaginal wall, and the union of the incision by sutures so placed as to lengthen the anterior vaginal wall and throw the cervix well backward, will tilt the fundus forward. The procedure is completed by a posterior colporrhaphy, in which the posterior vaginal wall is cut through, the incision extending from one lateral caruncula myrtiformis around the vaginal margin to that upon the opposite side; then by blunt dissection the vaginal wall is separated to a point at the level of the summit of the prolapsed wall, this dissection extended laterally to a line drawn from each external caruncle. The intervening wall, when cut away with scissors, forms a triangular denudation which lays bare the edges of the levator ani muscle. The surfaces are united by a continuous chromicized catgut suture which begins at the upper angle. The suture is carried first downward, and then upward upon the opposite side, so that each suture lifts up a segment of the denuded surfaces. In this way the parts are united, the vaginal wall retracted, and the edges of the levator ani muscle crowded forward over the front of the rectum. This procedure brings the inferior segment of the pelvic floor in contact with the newly constructed anterior, and affords a support to maintain the uterus in an anteverted position. Where there has been a prolapsus of the uterus beyond the first degree, such an operation should be

supplemented by ventrosuspension of the uterus. If the prolapsus has been very marked there should not only be ventrosuspension, but a shortening of the utero-sacral ligaments, in order that the cervix shall be held up, otherwise the uterus will drag upon its anchor from the abdominal wall, produce an elongation of the band, and cause very considerable discomfort. Where there has been a marked tendency to hernia of the intestines with the prolapsus, it is advisable not only to do the operation of shortening the utero-sacral ligaments, but also to obliterate Douglas' pouch by the union of the peritoneal surfaces and thus reconstruct a pelvic diaphragm at a higher level. Neglect of this procedure will in some cases result in a hernia through Douglas' pouch, even though the uterus may have been amputated and the cervix anchored to the abdominal wall. In women who are quite fleshy, with fat abdominal walls, the incision for the maintenance of the uterus in position is objectionable. In cases of vagino-uterine prolapse with very marked thickening of the vaginal walls, with elongation of the cervix, ventrosuspension is not effective, for the reason that the uterine neck has been very much elongated. Occasionally, also, patients suffer from gravity sores upon the cervix, with thickening of the vaginal walls, which renders the retention of the uterus difficult and undesirable. In such cases I have considered the sacrifice of the uterus, especially where the operation comes after the climacteric, as the preferable procedure. In removing the organ the fundus should be turned downward through the anterior fornix, the upper part of each broad ligament crushed with the angiotribe and ligated with catgut, in the groove thus formed, the uterus removed, and the uterine arteries ligated. A chromicized catgut suture should then be passed through each broad ligament and its ends carried through the lateral vaginal walls, so that when tied it lifts up each side of the vagina and insures against its subsequent prolapse. The peritoneal surfaces may be united to shut off the abdominal cavity. When a tendency to prolapse of the bladder exists, a section of the anterior vaginal wall is cut out, exposing the vesical wall, and the edges of the denudation are united by a continuous chromicized catgut suture, and the operation completed by the denudation already suggested upon the posterior vaginal wall. The vagina is held up by a loose packing with iodoform gauze. Such a procedure removes a uterus which from its alterations necessarily remains large, obviates the necessity for an abdominal incision, and effectually guards against subsequent vaginal hernia.

THE RELATION OF OVARIAN DISEASE TO INSANITY,
AND ITS TREATMENT.

BY

A. T. HOBBS, M.D.,
London, Ontario.

SERIES I.

THE mental life of woman conforms with the great physiological divisions of her physical existence, covering the periods from childhood to womanhood, from womanhood to the menopause, and from the menopause through her declining years. The mental characteristics vary markedly with the changing periods. The romping and hoydenish girl of the first takes on all the instincts of vigorous motherhood pertaining to the second period, and these give way at the menopause to the placid contentment and sedateness of advancing age.

Coincident with these physical and mental transitions occur changes in the reproductive system, the proper performance of which exercises a vital importance on the well-being of woman. The development of ovulation, the continuance of the ovarian function, and the cessation of this physiological process are full of perils. The germinating organism, weighing in all only eighty grains, is liable to the ingrafting of pathological processes at any period of its existence, but more especially when ovulation is active. When such lesions occur disturbance of function ensues, and this is succeeded by a series of nerve storms ranging in gravity from localized abnormal sensations to profound mental derangement. It is curious, but nevertheless true, that alienist writers generally overlook or take but little notice of these ovarian lesions which are such important factors in the causation of insanity. They devote more attention to the insanity brought on by irregularities of menstruation, when many of these irregularities are simply indicators of disorders of ovulation. The germ-producing organ is certainly of a more delicate structure and more highly complex, and, therefore, must exercise a greater potentiality in the human economy than a mere

receiving organ. The interdependence of the organ of reason and the organ of reproduction is clearly shown by the history of 40 cases of ovarian disease with complicating insanity, and by the good mental results which followed the surgical treatment of the different ovarian lesions. The accidents and diseases resulting from maternity do not occupy as prominent a place in initiating disease of the ovary as one would suppose, as 20 out of the 40 cases had never borne children. The influence of heredity is a feature that cannot be overlooked, as 40 per cent of these cases gave a direct or indirect history of hereditary tendency, and the probability is that the percentage would be larger still if a complete inquiry had been made into the family record for two or three preceding generations.

The diseases of the ovaries affecting these 40 cases fairly covered the gynecic range. They consisted of cysts that were either simple, multilocular, dermoid, or papillomatous, weighing from a few drachms to fifteen pounds; fibroid degeneration, ovarian abscesses, hematomas, inflammatory affections, and prolapse.

In 28 of the 40 cases there were present complicating lesions of other pelvic organs. Thorough examination of the pelvic organs of these patients under anesthesia was invariably carried out, and even then it was not always easy to determine whether the ovary or ovaries were sufficiently diseased to warrant even an exploratory incision, as it is not necessary for an ovary to be enlarged to be badly diseased.

The insanity occurring in many of these ovarian cases usually appeared during the onset of ovulation, or a few days prior to menstruation, or the maniacal propensities or delusions already existent in a chronic became exaggerated. Coupling a history of an insane patient such as this with a peculiar resilient feel obtained in a bimanual examination of an ovary only slightly enlarged, quite a fairly positive diagnosis can be made of a diseased cystic ovarian condition.

The most frequent type of ovarian insanity is that of mania. Maniacal symptoms were present in over 90 per cent. Sexual delusions were the exception, but when present were pronounced. Excitability, talkativeness, restlessness, and destructiveness were the main features evidenced in the maniacal. Even the melancholics became excited and more talkative with the onset of ovulation.

The preparatory treatment followed the usual surgical rules as far as practicable, but special care was taken with the prep-

aration immediately prior to operation when the patient was under the anesthetic. The operations necessarily varied according to the complications present. In 7 of these patients it was found necessary to do hysterectomy—4 by the abdominal route and 3 per vaginam; in 24 cases single or double oöphorectomy was done, but in the remaining 9 a part of one or both ovaries was preserved after the excision of the diseased portion. Out of the 40 cases, 2, or 5 per cent, died—Case No. 2 from pneumonia on the twelfth day, and Case No. 146, in a week succeeding operation, from septic pneumonia. The pus tubes and ovarian abscesses in the latter patient unfortunately ruptured during operation. The remaining 38, or 95 per cent, made good physical recoveries.

As to the subsequent mental history of these cases, the results were surprisingly good. The majority of those who recovered improved rapidly after operation, being perfectly well mentally inside of three months. Some, however, took a year to regain their normal mental attitude.

The mental classification and recovery rate was as follows:

	Cases.	Recoveries.
Acute mania.....	10	7
Chronic mania.....	23	8
Epileptic mania.....	2	0
Folie circulaire.....	2	1
Psychocoma	1	1
Acute melancholia....	8	2

Of the 19, or 47½ per cent, who recovered, 6 had been insane under one year, 14 between one and two years, 1 between two and three years, 3 between four and five years, and 4 over five years. There were also 10, or 25 per cent, who improved and are still improving—2 of whom have been insane less than one year, 1 between one and two years, 2 between two and three years, 1 between three and four years, and 4 over five years.

Heredity directly and indirectly affected 16, or 40 per cent of the whole. Following operation on the two epileptics there was absolutely no mental result, and the convulsive attacks still continue.

Taking the 12 uncomplicated cases, there were 7, or 58 per cent, recoveries, and 2, or 17 per cent, improved, or a total of 75 per cent who received mental benefit as a result of the surgical treatment.

In 28 ovarian cases there were present other lesions which necessitated additional treatment, rendering the chances of

mental recovery somewhat less, although 12, or 43 per cent, recovered, while 8, or 28 per cent, improved. This would show that 71 per cent of the cases that were complicated were immensely bettered by operative measures.

As illustrative of the good work succeeding the treatment of pelvic lesions, I will detail the history of a few cases according to the numbers they occupy in the gynecological list.

CASE I.—Admitted December 16, 1889, at age of 27; was single. Had been insane eight months prior to admission. No hereditary history. At the time of operation, April 27, 1893, she was classified as a chronic maniac with marked sexual delusions, and was at times violent and destructive. Both ovaries, being badly diseased, were removed. Her mental recovery was slow but steadily progressive. She was discharged perfectly well, both physically and mentally, on September 11, 1896, after an asylum residence of seven years.

CASE 51.—Was admitted November 10, 1896, at age of 25. She was unmarried and of good education. Her father was at one time mentally deranged for a short period. This patient had, before operation December 1, 1896, been in other asylums since May 28, 1892. A left ovarian cyst as large as an orange was removed, and the left ovary, being adherent, was partially excised. For two months she had two or three violent outbursts of excitement and destroyed all her clothing. After that time she seemed to become suddenly well, and remained so until her discharge on September 12, 1897, after spending five and one-half years in three different asylums for insane, and classified as a chronic, hopeless maniac.

CASE 56.—Was admitted on December 3, 1896, at the age of 30. She had had three children. This case was one of peculiar interest. She was found wandering in a condition of dementia on the Grand Trunk Railway station platform in London. She could give absolutely no history of herself. After a residence of a month in jail she was removed to the asylum for treatment. On December 29, 1896, she was operated upon. The uterus and ovaries were grossly diseased and bound down in the pelvis. The uterus, when freed, was suspended to the abdominal wall, but both ovaries were so badly diseased that they were removed. Subsequent to operation she was very excited and noisy for two days, and woke up on the third morning perfectly well mentally. She then detailed a full history of herself; how she had been insane for some time previously in the United States, and, being dis-

Case number.	Insanity.	Duration of insanity.	Heredity.	Ovarian disease.	Operation.	Complication.	Result.	
							Physical.	Mental.
1	Chronic mania.	4 years	None	Both ovaries cystic and enlarged.	Ovariectomy	Cysts of broad ligament.	Recovered.	Recovered.
2	"	11 years	Nephew	Left ovarian tumor (cyst).	"	None	Died twelfth day. Pneumonia.	
9	"	24 years	Cousin (epileptic).	"	Ovariectomy per vaginam	"	Recovered.	Improved.
13	"	34 years	Paternal grandfather.	Both ovaries diseased and adherent.	Ovariectomy	Retroverted uterus.	"	"
36	"	14 years	Cousin mother.	Left ovarian tumor (cyst).	"	"	"	Recovered.
44	"	7 years	Uncle	Left ovary diseased and pro-lapsed.	Ovariectomy per vaginam	Lacerated cervix and peritonium.	"	"
51	"	5 years	Father	Left ovarian tumor (cyst).	Ovariectomy	None	"	"
56	Psychocoma.	1 year	None	Both ovaries diseased and adherent.	"	Retroverted uterus.	"	"
62	Chronic mania.	3 years	Father and mother.	Right ovary fibroid. Left ovary cystic.	"	"	"	"
64	Acute mania.	1 year	None	Both ovaries cystic and pro-lapsed.	"	"	"	"
67	Chronic mania.	14 years	Two brothers.	Ovarian tumors (cysts), adherent.	Abdominal hysterectomy	None	"	"
80	"	8 years	Aunt	Right ovarian tumor (cyst). Left prolapsed.	Vaginal hysterectomy	Fibroid tumors of uterus.	"	Improved.
85	"	8 years	Mother and sister.	Both ovaries prolapsed and completely cystic.	Ovariectomy	Chronic metritis; uterus displaced; cervix badly torn. Uterus retroverted and con-cretion in appendix.	"	Unimproved.
88	"	2 years	None	Both ovaries cystic.	Vaginal hysterectomy	Complete procidentia of uterus, and cervix torn.	"	Improved.
90	"	5 years	"	Papillomatous cyst of left ovary weighing fifteen pounds.	Abdominal hysterectomy	Uterus involved in mass.	"	Recovered.
100	Acute mania (folie circulaire).	6 months.	"	Both ovaries completely dis-eased.	Ovariectomy	Uterus acutely ante-flexed.	"	Unimproved.
102	Chronic mania.	16 years	Father, uncle, and aunt.	Both ovaries prolapsed and diseased, and adherent to everything in pelvis.	Abdominal hysterectomy	Uterus and all pelvic organs involved in pelvic mass.	"	Recovered.
108	"	23 years	None	Left ovary found complicated with a left inguinal hernia.	Ovariectomy (via inguinal canal)	Left inguinal hernia	"	Unimproved.
111	Chronic mania (folie circulaire).	4 years	"	Both ovaries diseased. Left adherent to a coil of intestine.	Ovariectomy	Uterus retroverted and cer-vix lacerated.	"	Recovered.

139	Acute mania.	14 months.	Brother (epileptic).	Left ovarian tumor (cyst). Right ovary also diseased.	Ovariectomy	None	Recovered.	Recovered.
137	Epileptic mania.	10 years	None	Both ovaries prolapsed and cystic.	Ovariectomy per vaginam	"	"	Unimproved.
144	Chronic mania.	4 years	"	Both ovaries cystic	Celiotomy and puncture of cysts of ovary	Two pedunculated fibroid tumors.	"	"
145	"	34 years	"	Both ovaries diseased and adherent to cul-de-sac	Ovariectomy	Uterus retroverted.	"	"
146	Acute mania	4 months.	Father.	Both ovaries and tubes were large pus abscesses.	Abdominal hysterectomy	Uterus large and friable.	Died seventh day from septic pneumonia.	
149	"	10 months.	None	Cysts of both ovaries.	Celiotomy per vaginam and puncture of cysts.	Coil of intestine and knuckle of omentum bound down to pelvis.	Recovered.	Recovered.
150	Acute melan- cholia.	4 months.	Sister	Right ovary had a hemato- ma, and left a dermoid cyst.	Ovariectomy	None	"	Improved.
153	Chronic ma- nia.	4 years.	None	Dermoid cyst of left ovary containing teeth and hair.	"	"	"	Recovered.
154	"	5 years	"	Left ovary enlarged and dis- eased	"	Uterus retroverted.	"	Improved.
157	Acute mania.	10 months.	"	Both ovaries full of small cysts.	Celiotomy and puncture of cysts.	Three uterine fibroids and an adherent appendix.	"	Recovered.
168	"	7 months.	"	Hematoma of right ovary and cystic condition of left.	Celiotomy and excision of hematoma of right and puncture of cysts of left.	None	"	Unimproved.
172	Acute melan- cholia.	1 year	"	Ovaries and tubes bound down and adherent to uterus.	Celiotomy and separation of tubes and ovaries.	Uterus retroverted	"	Recovered.
177	Acute mania.	4 months.	"	Both ovaries cystic, right ovary more so than left.	Celiotomy and puncture of cysts	"	"	"
188	Chronic ma- nia.	11 years	Uncle	Right ovarian cyst	Vaginal hysterectomy	Uterus and adnexa all ad- herent.	"	Improved.
189	Epileptic mania.	2 months.	None	Both ovaries and tubes pro- lapsed and adherent and diseased.	Ovariectomy	Uterus retroverted and cer- vix lacerated.	"	Unimproved.
194	Chronic ma- nia.	11 years	"	Right ovary diseased.	"	Uterus retroverted and a fibroid tumor attached	"	Improved.
208	"	3 years	"	Right ovarian tumor (cyst).	"	Hematoma of right vulva.	"	Unimproved.
207	Acute mania.	2 months.	"	Left ovary badly cystic.	Celiotomy and puncture of cysts	Vaginal gland and uterus retrodisplaced.	"	Recovered.
214	Acute melan- cholia.	1 month.	"	Right ovary diseased, pro- lapsed, and adherent to pelvic cavity.	Ovariectomy	Uterus retroverted	"	"
227	Acute mania.	4 months	Maternal grand- mother.	Both ovaries cystic and larger than normal, espe- cially the left.	Celiotomy and excision of diseased portion and punc- ture of cysts.	None	"	"
242	"	6 months	None.	Both ovaries cystic.	Celiotomy and puncture of cysts.	Uterus retroverted.	"	Improved.

charged improved from a United States asylum, she relapsed mentally, and finally got separated from her family and wandered to London. She was discharged fully recovered on June 16, 1897, and sent to her friends in Pennsylvania.

CASE 111.—Admitted on June 4, 1897. Was married; no children, but had a miscarriage; no heredity. On May 10, 1898, she was operated on for a diseased cervix uteri and a displaced uterus by the Alexander method. She made a good physical recovery, but her mental condition got worse. She was kept in the refractory ward most of the time. It was noticed that the insanity was exaggerated at time of ovulation, and on examination the right ovary felt a little enlarged and resilient. She was operated upon on December 18, 1900. The right ovary was found entirely diseased, and the left ovary, although not enlarged, was bound down to the broad ligament with a coil of intestine adherent to it. Both ovaries were removed, and since that time she has been perfectly well mentally and is gaining physically.

CASE 227.—Was admitted August 16, 1900, at age of 22. Had been married three years, but had no children or miscarriages. Had an eccentric maternal grandmother. She herself had had chorea six years previous to this. Present attack began June 15, 1900. She was acutely maniacal on admission, and remained so until operation, October 23, 1900. The ovaries, on examination, felt slightly larger than the normal, the left a little more so than the right. Celiotomy was done and excision of left ovary was made, reducing it to one-third of its former size. The left ovary was relieved by puncture of several cysts. She made a good physical recovery. The mental condition lessened in acuteness immediately, and she gradually improved and was sent home on probation on December 8, 1900, quite well. She still remains well and has increased considerably in weight.

As to why diseases affecting the organs of ovulation interrupt normal mental functions in so many of the female sex, it is difficult to conjecture. Plausible theories may be advanced as possible explanations of this phenomenon. Two theories are advanced as probable solutions, viz.:

1. *The Reflex Theory*.—This theory hinges upon the fact that irritation produced in one organ by disease affects its numerous nerve filaments; thence from these, through the nerve plexuses connecting the various organs of the body, it reflects its irritability upon one or more of the other organs.

The brain, being but an integral part of the body, is just as liable to disturbance of its physiological mental functions, as shown by various insane phases, as is the vomiting which is produced by a pregnant uterus. Insanity is very liable to occur in those whose brains are unstable in character or are afflicted by an hereditary tendency to mental breakdown when suffering from pelvic disease.

2. *The Internal-Secretion Theory*.—This is founded upon a theory advanced by some German physiologists, who claim that there is “a normal and constant contribution of specific material by the reproductive glands to the blood or lymph, and thence to the whole body,” and “this secretion reacts upon the rest of the organism through the nervous system.” If this is true, the deduction may be made that the changed condition in the ovary brought about by pathological disease would produce a pathological secretion. If, therefore, the healthy ovarian secretion exercises such a profound effect upon the nervous organism in health, what must be the effect on the nervous system when there are unloaded into the circulation noxious diluents of such unknown potency as the products of deranged ovarian functions?

These theories are offered in explanation of how ovarian disease acts in producing mental alienation.

In conclusion, I desire to emphasize the fact that, from experience gained by the examination and treatment of these cases, it is a serious error for physicians to overlook the functions of ovulation and menstruation in women bordering on the domain of insanity. The determination of the presence or absence of disease of the reproductive organs should be a *sine qua non* in the early treatment of all insane women, and the neglect of this precaution may condemn many of these unfortunates to a life of untold misery until death releases them from mental thralldom.

On pages 488 and 489 will be found a detailed list of the 40 ovarian cases.

396 DUNDAS STREET.

CEREBRAL INJURIES DURING BIRTH AS A CAUSE OF INFANTILE MORTALITY.¹

BY

E. E. MORSE, M.D.,
Washington, D. C.

NOWHERE, perhaps, have the benign influences of modern knowledge been of greater practical benefit than in midwifery. With our clearer vision we now prevent puerperal fever; or, should it be our great misfortune to have this serious complication to contend with, we can do so with every hope of success, whereas within the memory of many of those present childbed fever was the dread of the lying-in chamber, and justly so in the light of the frightful mortality ascribed to it.

To-day sepsis in obstetrics is regarded as a distinct reflection upon the care and skill of the physician, with the consequence of a great reduction in the maternal death rate. While women still die in confinement, death in these cases is, as a rule, from causes at present beyond our power to prevent or control.

When we turn from the study of the mortality tables of the mother to those of her offspring, we are met with the very discouraging fact that, with all of our boasted skill and deeper knowledge, just as many children die during birth to-day as fifty years ago. Winckel claims that 10 per cent of all children born die before the eleventh day—6.7 per cent during labor and the remaining 3.3 per cent from injuries received during birth. Julius Eröss, from a study of 1,500,000 deliveries in sixteen of the largest cities of Europe, found a mortality of 10 per cent at the end of four weeks, of which 54 per cent were due to congenital debility—one stillbirth to every 28½ deliveries. Clark, of Cleveland, reports in 1896: births, 8,927; deaths under one month, 888, or 9.9 per cent. The report of the health officer for the District of Columbia, 1898, shows 2,151 births and 212 deaths during the first fortnight. This gives us a mortality of 12 per cent; but as the

¹ Read before the Washington Obstetrical and Gynecological Society, April 21, 1900.

return of births in the District is notoriously loose, the probabilities are its death rate is not higher than in cities of similar character. If we add to these figures the cases in which the child, though living, is in some way maimed or deformed, physically or mentally, we may begin to realize how serious a matter it is to bring forth a child with a sound mind and a sound body.

For a thorough understanding of the conditions which are mainly responsible for these misfortunes, it is necessary to refer to the factors which influence labor and the peculiarities of the fetus which especially render it liable to injury. Virchow has admirably pointed out the extreme fragility of the fetal blood vessels. Dr. Jacobi says the young infant has less blood, in proportion, and that this is defective in fibrin and salts, insoluble albumen, and in the beginning has an excess of hemoglobin and white blood cells. While the head of the infant is relatively large, the blood pressure, according to Hoffman, is very low; the arteries when cut do not spurt. This produces a venous stasis, which predisposes to bleeding in the venous territory. Dieulafoy says: "The greater the fragility of the blood vessels of the newly-born, the greater should be the caution on the part of the obstetrician. The undeveloped condition of the blood vessels and the cranial bones is the usual cause of cephalhematoma, yet many cases are unavoidable."

A prolonged labor, by producing continued and protracted pressure on the fetal brain, is the main factor in infantile mortality and injury. The alteration in the cerebral circulation from prolonged pressure may be caused by a great number of conditions, of which obstructions in the pelvis, congenital or otherwise, are perhaps the most prominent; rigid os uteri and perineum, long anterior lip of the cervix, are also contributory to this difficulty, with numerous minor conditions.

The immediate effect of prolonged and great pressure is a cerebral congestion and a variable degree of asphyxia; greater pressure causes a more pronounced degree of asphyxia and corresponding cerebral congestion. Speaking of the results of asphyxiation and the long array of cerebral degenerative changes occurring in prolonged labors, the late Dr. Lusk says: "During labor, especially in the last stage, the placental aeration of the blood is interfered with by the uterine contractions, and in its passage through the pelvis the surface of the child is subjected to pressure and friction."

Dr. Madison Taylor, commenting on the above, says: "The first effect of the compression of the cord is to arrest the circulation in the umbilical arteries. The pressure in the aorta is thereby augmented and increased work thrown on the left ventricle. When the compression of the cord is temporary the circulation may be restored, the apnea may again return; but in a case where the respirations continue the capillaries of the lung fill with blood from the pulmonary artery, the intrathoracic congestion is increased and the heart action lowered. As the irritability of the medulla sinks the respirations fail, the cavities of the heart fill with venous blood, the lungs are congested, and in some instances subpulmonary ecchymoses result from over-distension of the pulmonary vessels. Outside the thoracic cavity the venous trunks are often distended with blood. The secondary venous stasis is most marked in the vessels of the *neck, head, and brain.*" Dr. Sarah McNutt has expressed the opinion that the prolonged compression and asphyxiation are directly responsible for the altered nutrition of the cerebral nerve cells and hemorrhage from the blood vessels of the pia mater, and that there is a close connection between prolonged labor and asphyxia with the idiocy and cerebral palsies of children. The same authority, in reporting autopsies on 10 cases—7 head and 3 breech—found marked hemorrhages in all. Another writer examined 130 cases out of 185, and in 85 found congestion and hemorrhage. The hemorrhage is usually meningeal, and varies from a general distribution of blood over the surface of the brain to localized clots, both large and small, dependent upon circumstances of time and pressure. When the hemorrhage is not fatal, it usually produces changes in brain tissue which leave the child in a condition of idiocy or palsy. Cruveilhier is authority for the statement that one-third of all the deaths occurring during parturition are due to meningeal hemorrhage. Finally, the words of Barton Cooke Hirst may be quoted as full of significance: "Any one who makes a number of postmortem examinations in cases which die in the first few days of life must be struck by the number of cases in which the only lesion is intense cerebral congestion with serous effusion."

In discussing the question of cerebral compression and congestion we cannot avoid reference to the part played by the obstetric forceps. While this instrument may be justly considered "humane" in the light of the great benefits conferred upon suffering maternity, the fact yet remains that its em-

ployment is not without danger. Especially would we emphasize the fact that its indiscriminate use at any and all times, without reference to the conditions present, is most unjustifiable and dangerous. An instrument which, properly understood and scientifically used, is capable of doing an unlimited amount of good, may, when applied under opposite conditions, be the direct agent of fatal injuries or misfortunes infinitely worse than death itself.

It has been pointed out by numerous writers, including Dr. Jacobi, that the presence of the blades of the forceps in the pelvis must tend inevitably to diminish the already too narrow space for the head and increase the compression and congestion. As between the evil effects of a bad labor and the compression of the forceps, we all agree that the former is worse than the latter. In such a case, aside from the injuries sustained by the maternal soft parts, the asphyxia resulting from long pressure of the head will have already caused so pronounced a cerebral congestion that the delicate structure has suffered damage, possibly beyond repair. Here timely interference with instruments would have substituted a lesser danger, with a reasonable hope of escaping permanent injury. It is hard to realize that the force of uterine contractions alone has, in many instances, been sufficient to fracture the bones of the fetal skull. The injuries resulting from compression of the head by forceps are essentially traumatic: lacerations of the skin and blood vessels, depressions and fractures of bones, meningeal and cerebral hemorrhages, with the attendant train of diseases which arise from these conditions—cephalhematomata, palsies, arrested mental development, idiocy, and death.

Many of the injuries sustained are not at once apparent, but later it is found that the infant is not as it should be. Dr. Chauncey R. Burr reports in the *Boston Medical and Surgical Journal*, 1892, a series of nine forceps deliveries in which there were obstetric paralyses existing from as early as nine weeks after labor to the age of 5 years. The celebrated Dr. Goodell, speaking on this subject, says: "My experience would lead to the belief that the great majority of cases of cerebral palsy are due to the acute and unequally distributed pressure of the forceps to the child's head, rather than to the prolonged but equally distributed pressure in an unaided labor. More frequently have I observed these lesions when the blades of the forceps have been applied either obliquely or transversely on the child's head instead of on its sides. For

then not only is the force more equally distributed, but the amount of the pressure of the posterior blade is expended upon the vital portions of the brain."

From a consideration of the above it is apparent:

1. That the principal cause of the large infantile mortality is found in compression to which the skull and its contents are subjected during birth.

2. That this pressure may be from (a) uterine contractions, which in turn may be either short in time but severe in character, or again of a less severe character but more prolonged; (b) compression by instruments.

In seeking a remedy for the conditions under discussion, it is well to bear in mind that the skill of the obstetrician is exhibited quite as much in delivering a child living and healthy as it is in protecting the mother from harm; for while in many cases it becomes necessary to sacrifice the child in favor of the more valuable life of the mother, the real triumph of skill is in preserving both. Here it may not seem out of place to enter a protest against the idea, which seems prevalent in many quarters, that obstetrics requires neither judgment nor skill; that a midwife will answer all the requirements of the case; and especially that all the instruction needed by the physician himself is to be furnished in the course of lectures treating on this subject. Nothing could be more fallacious. The proper care of a patient in labor demands patience, experience, judgment, and skill. Were these qualities possessed more extensively and in greater degree, more living children would be brought into the world and fewer asylums for the feeble-minded would exist. Familiarity with the conditions present in each case is absolutely essential to the best results. Careful watching of the fetal heart sounds, the progress or arrest of the presenting part, are the guides which warn us to interfere or not. The abandonment of the forceps in many cases of pelvic deformity, and the substitution therefor of symphyseotomy, would be followed by better results. At present, with our knowledge of surgery and the principles of asepsis, this operation is attended with very little danger. The objection formerly existing against symphyseotomy has been removed in great measure by wiring together the separated bones. As an alternative to craniotomy, which we regard today with a feeling akin to horror, or, failing that, delivery by forceps, the chances are largely in favor of symphyseotomy. A child, after delivery by forceps through a flat or contracted

pelvis, has very little chance of life, and if living is practically sure of being feeble or idiotic; moreover, the condition of the mother in such a case is bound to be bad, as the forcible delivery of a child under these circumstances must be attended by serious results, the inevitable consequence of much bruising and tearing of parts. Until our knowledge of infant feeding enables us to care for premature infants with a greater degree of success than at the present day, our strongest hope for both mother and child lies in symphyseotomy. It seems not too much to hope that in the enlightenment of future generations the induction of premature labor will obviate the necessity of all destructive operations on the child and likewise all cutting operations on the mother.

DOUBLE ECTOPIC PREGNANCY, BOTH SIDES RUPTURED;
OPERATION; RECOVERY.

BY

GEORGE H. NOBLE, M.D.,
Atlanta, Ga.

THOUGH we have observed with interest an occasional report of double ectopic pregnancy as a pathological rarity, I have seen no mention of double ectopic pregnancy with rupture on each side. This case is the first of its kind and is reported for the interest it may create. One point is that pregnancy occurred near the fimbriated extremity of each tube and the ruptures took place at early stages of gestation, otherwise the woman would have died from excessive hemorrhage before she received attention. The slow bleeding permitted agglutination of pelvic and abdominal viscera in such a way that bleeding was subsequently more or less modified. Such a thing would have been impossible four to six weeks later or if the rupture had occurred near the uterus—the usual point of rupture in cases of excessive hemorrhage.

Grady Hospital, No. 9530, Mrs. L. C., age 23 years, white, married six years, one child three years old. Has had no pelvic trouble except painful menstruation for which she was treated a year ago. Since then has been very well. On admission complained of paroxysms of pain in lower part of abdomen, rectum, and back. She stated that they began six weeks before and increased in severity, and later attended with nausea

and vomiting. She came in with a temperature of $99\frac{1}{4}^{\circ}$, pulse 112, respiration 24, no pain, some headache, slight bloody flow from uterus, abdomen tympanitic, and tenderness around uterus, which was slightly enlarged.

I saw this patient the following day, and discovered a soft, imperfectly defined, boggy mass on right side, filling half the pelvis to a little above the brim. On the left side I found a similar mass about the size of a man's fist. Between them there was a distinct groove or sulcus. Pulse rapid and quick, with some loss of volume, rather thready; pupils dilated and skin cool. The woman stated that she felt faint and weak at periods of greatest pain.

I made a diagnosis of ruptured ectopic pregnancy and directed that she be prepared for operation.

On section, January 14, 1901, I found free blood in the abdominal cavity under the peritoneum, and the right side of the pelvis and iliac fossa full of clots more or less fixed by agglutination of viscera. The appendages on that side were removed and a rupture, about $1\frac{1}{2}$ inches long, on the upper border of the tube was discovered. The gestation sac was lying entirely disconnected and free in the iliac fossa. The period of gestation estimated at eight to ten weeks.

On the left side the mass mentioned proved to be clots similarly encased in agglutinated viscera, and on removal free hemorrhage was found escaping from the left Fallopian tube, which was not more than an inch in diameter. It was tied off, and inspection showed a slight rupture in upper border of the tube at the fimbriated extremity, and many villi attached to the mucosa. After ligation hemorrhage came up from the pelvis, which was traced to a lacerated vein in the posterior wall of the left broad ligament which required tying. Douglas' pouch was drained with gauze, on account of excessive oozing from the pelvic walls and intestines. Estimated period of gestation, four weeks. The woman made an unusually smooth recovery, though she required the free use of saline solutions and other stimulation for the first twenty-four hours.

So far as I know, this is the first case of double ectopic rupture.

181 SOUTH PRYOR STREET.

I. OVARIAN CYST AND SUPPURATING HEMATOCELE.
II. SALPINGITIS WITH OBSCURE LOCALIZING SYMPTOMS.¹

BY

GEORGE ERETY SHOEMAKER, M.D.,
Gynecologist to the Presbyterian and Methodist Hospitals,
Philadelphia.

CASE I.—D., married, age 48, eight children; no miscarriages. Patient of Dr. S. A. Fries. She had been tapped seven weeks before coming under observation, when ten quarts of thin, chocolate-colored fluid had been removed, disclosing a remaining mass in the upper abdomen. The abdomen had rapidly become again distended, and now contained, on her admission to the Presbyterian Hospital, a large cystic tumor, which was somewhat irregular on its upper surface, and presented many of the characteristics of an ovarian cyst, except that a possible origin in the upper abdomen could not be disproved. Eighteen months before, when the last child was born, no tumor was felt. The patient was very stout, was jaundiced, had a very irritable stomach, while a trace of albumin and a few hyaline casts appeared in the urine.

At operation the tumor was found to be a cyst of the left ovary and was removed. The ovary of the opposite side contained a small hematogenous cyst, and was removed with a hydrosalpinx of the same side. The semi-solid contents of chocolate-colored fluid measured about ten quarts. Adhesions were marked over the anterior surface of the tumor, probably owing to the tapping. There were strong adhesions to the transverse and descending colon, and considerable stripping of the peritoneal covering of the bowel occurred on the left side. Some uncertainty was felt as to the complete control of hemorrhage from an area in the mesocolon near the sigmoid flexure. There was some tendency to subperitoneal bleeding, but, not appearing to be persistent or definite, after some hesitation irrigation with hot salt solution was used and the abdomen closed. There was much fat deposit behind the peritoneum and about the large intestine, the patient being somewhat

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, January 17, 1901.

obese. She recovered slowly, after much vomiting for the first day or two—a symptom to which she had been subject for some time. The patient was most unruly and difficult to manage. The slight jaundice persisted.

About a week after operation, pelvic examination being made, there was found, distending the tissues around and between the rectum and the vagina and on both sides of the uterus, a more or less indurated mass. This became quite hard, but about four weeks after operation it gradually softened and obscure fluctuation was obtained immediately behind the cervix, the temperature being at this time irregular, with some sweating and a feeling of rectal pressure. Diagnosis was made of pelvic hematocoele which was undergoing suppuration. The source of blood was thought to have been the vessels in the mesocolon and in the neighborhood of the sigmoid, which had been injured in the separation of strong adhesions in those regions. Incision immediately behind the cervix gave exit to several ounces of bloody pus with small black clots. The cavity from which this came was shallow, very irregular in outline, and appeared to contain shreds of blood clot which had not yet broken down. Drainage tube was inserted and light iodoform gauze packed in the vagina. Under careful irrigation the discharge rapidly diminished, the patient's temperature becoming normal and so remaining. Complete recovery followed. This collection of blood must have been subperitoneal, as it surrounded and more or less fixed the rectum. After it had become consolidated the pressure on the rectum was the source of great distress to the patient, who complained rather of pressure than of pain. She had a great deal of difficulty in having a stool, owing to the presence of this induration. The vaginal incision was made about five weeks after the laparotomy. The jaundice disappeared about the eighth week. She was discharged in good condition.

CASE II.—H. H., 25, single, colored. Admitted to ward in Presbyterian Hospital with a history as follows: Previous health robust; menstruation normal. In August, 1900, three months before admission, had an attack of acute abdominal inflammation, characterized by vomiting, pain in the right abdomen opposite the navel, slight jaundice, irregular temperature reaching 103°. Slowly recovered, but since had more or less distress in the right lower abdomen, referred to the region of the appendix. This distress increased by lifting and working.

Two days before admission to the hospital, patient while menstruating had gotten her feet wet washing a pavement. The following day had chilliness, great pain all over the abdomen, vomiting, constipation, and elevated temperature. She was admitted to the surgical ward with a supposed diagnosis of appendicitis.

I was asked to see her in consultation with the surgeon on duty, for diagnosis. When seen by the writer she had been ill five days. The tongue was coated a dirty white, somewhat dry; while vomiting had been severe, it had ceased; there was slight jaundice, the face anxious. The greatest pain complained of was in the region of the gall bladder and epigastrium; tenderness, however, was most marked on both sides just above Poupart's ligament. Muscular rigidity, while not marked, was present in the left lower abdominal quadrant; tenderness extended up over the region of the appendix. The tenderness being too great for a pelvic examination, ether was given for diagnosis, with the result that nothing could be felt in the upper abdomen and no mass in the region of the appendix. In Douglas' cul-de-sac were felt prolapsed coils of intestine, which when displaced gave the sensation of easily parted, very slight adhesions. Both tubes and ovaries slightly enlarged and fixed; the uterus was restricted in mobility and forward. Diagnosis of acute salpingitis was made, with the reservation of the possibility of a coincident involvement of the appendix. On this diagnosis the patient was transferred to the gynecological department under my care. As the attack was now five days old and the temperature range was improving; as vomiting had ceased, and the pulse was of good quality, ranging below 90, expectant treatment was continued and ice ordered for the lower abdomen.

During the next week the point of greatest tenderness varied from the epigastrium to McBurney's point and across the whole lower abdomen. At times palpation of the epigastrium was impossible. Muscular rigidity, however, disappeared in the lower abdomen, and the general condition gradually assumed normal, except for a slight pelvic tenderness.

Patient was confined to bed and the attack allowed to subside, and three weeks after the onset abdominal section was performed. Owing to the slight jaundice, the persistent high location of pain and tenderness, the rather high situation of the inflammation, it was supposed that the appendix would be found involved with the tubes. The incision was therefore

made one inch to the right of the median line and through the right rectus muscle. The inflammatory disease was found to involve chiefly the uterine adnexa. The appendix dipped down into the pelvis, however, and was adherent by its tip to the enlarged right ovary, but its walls were not inflamed and there were no adhesions throughout its continuity. It was therefore not removed. There was capillary congestion and a roughening of the peritoneum over several coils of small intestine in the lower abdomen. The omentum was slightly adherent to the anterior pelvic brim. Both tubes and ovaries were buried in dense adhesions. The right tube was contorted and the uterine extremity normal for about an inch. The fimbriated extremity was completely destroyed by inflammation. Two pockets of inflammatory material occupied the lumen of the tube, the outer one containing yellowish pus in flakes, the inner one swollen rugæ covered with flakes of inflammatory lymph. The right ovary, which was buried with the tube and under the inflammatory exudate, contained a cyst one and a half inches in diameter. Its contents were thin, bloody fluid. Tube and ovary were with some difficulty freed, tied off, and removed.

The left ovary, when freed from adhesions, was found to be nearly normal in size. The left tube was infiltrated and three-quarters of an inch in diameter. After separation from its bed of adhesions, bloody semi-purulent material could be squeezed from its outer opening; there was free oozing from the fimbriæ and from adhesions even after irrigation and sponge pressure. The leaving of the tube was considered unsafe on account of the free oozing and danger of infection from tubal contents. It was therefore removed with a portion of the corresponding ovary, the remaining portion of the ovary being left with the hope of maintenance of some function. Irrigation with salt solution, careful peritoneal toilet, and closure of the wound by through-and-through silkworm-gut sutures and catgut to the aponeurosis.

Slow but satisfactory recovery.

3727 CHESTNUT STREET.

CANCER OF THE CERVIX AND PELVIS FOLLOWING
SUPRAVAGINAL HYSTERECTOMY.¹

BY

CHARLES P. NOBLE, M.D.,

Surgeon-in-Chief, Kensington Hospital for Women,
Philadelphia.

ONE of the arguments used in favor of total hysterectomy as against supravaginal hysterectomy for fibroid tumors of the uterus or for extensive inflammatory disease of the uterus and appendages, is that in a definite percentage of cases the cervix, if left in the pelvis, subsequently becomes the seat of carcinoma. A few cases of this kind have been reported, and these are always referred to in papers written from this standpoint, so that it is made to appear that there is considerable risk of cancer if supravaginal hysterectomy is employed instead of total hysterectomy. My own experience, which embraces more than one hundred and seventy-five supravaginal hysterectomies for fibroid tumors, and a larger number for inflammatory disease of the appendages, has not borne out this contention, but, on the contrary, indicates that cancer following supravaginal hysterectomy is of extremely rare occurrence.

March 7, 1895, the following case was operated upon in my service at the Kensington Hospital for Women: Mrs. D., age 35, married, has had three children and one miscarriage. She has suffered from menorrhagia of long standing, and has had numerous attacks of pelvic peritonitis. Abdominal section disclosed a fibroid tumor of the uterus the size of a coconut, a left ovarian cyst, and a right hydrosalpinx. These structures were densely adherent in the pelvis, and the tumors were edematous and infiltrated with inflammatory products. Supravaginal hysterectomy was performed, removing the tumor and appendages, the fibroid tumor, and the corpus uteri. The atypical condition of the tumors was noted, but it was attributed to the repeated attacks of peritonitis from which the patient had suffered. Mrs. D. made a fairly good recovery and was discharged from the hospital April 7.

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, January 17, 1901.

Unfortunately no detailed study of the specimens was made, and no microscopic sections were examined.

Four months after the operation the patient began to bleed irregularly from the vagina. Eight months after the operation Dr. H. E. Applebach made a pelvic examination and found that the pelvis, vagina, and cervix were involved in an extensive cancer. The patient died a few months later, about one year after the operation.

As the specimens from this case were not examined, it is impossible to say definitely where was the primary seat of the cancer; but, in view of the history both before and after operation, there is good reason to believe that a carcinoma of the body of the uterus existed as a complication of the fibroid tumor at the time of the operation, and that this disease had already involved the broad ligaments when the hysterectomy was performed.

This case is reported not so much because of its value in itself as because of the negative value of my own experience with reference to the appearance of cancer in the cervix left after supravaginal hysterectomy. This is the only one which I have met, and in this there is every reason to believe that an unrecognized cancer existed at the time of operation.

DERMOID AND OTHER CYSTS OF THE OVARY :

THEIR ORIGIN FROM THE WOLFFIAN BODY.¹

BY

SAMUEL W. BANDLER, M.D.,

New York.

(With Illustrations.)

The following portion of this article is concerned with the description and the microscopical examination of nine dermoid cysts.

CASE I.—The tumor of the right ovary is 7 centimetres long and 5½ centimetres wide, rather long in shape, and consists of two parts, a solid and a cystic. The solid portion rests upon the cystic portion at one end of the tumor like a cap. In section the solid portion proves to be the ovary with several cystic structures, of which the largest has the size of a

¹ Continued from p. 876, March JOURNAL.

cherry pit. The cystic portion, situated on the side corresponding to the hilus of the ovary, contains a thick, cheesy matter mixed with hair. The cyst wall is of the thinness of paper on one side and almost transparent, while on the other side it forms the thick, so-called "dermoid prominence." This forms an elevation above the inner surface which is $2\frac{1}{2}$ centimetres wide, 4 centimetres long, and of the thickness of a finger, being closely covered with hair. This prominence itself is not entirely solid, but shows in section several cystic structures. In other parts of the cyst wall are seen blonde hairs which seem to grow at these points, but a microscopical examination shows that they have not originated in the

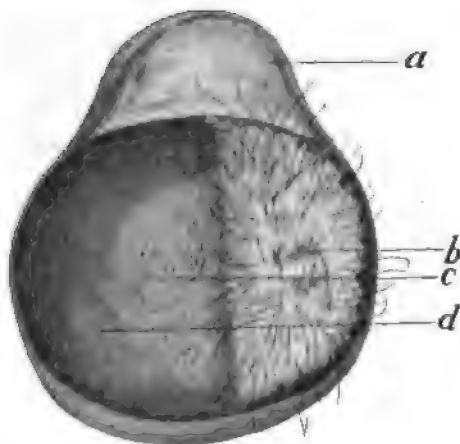


FIG. 62.—a, remains of ovary; b, "dermoid prominence" covered with hair; c, part of the cyst wall, still lined with squamous epithelium; d, translucent thin cyst wall lined with granulation tissue, being a direct continuation of the ovarian substance.

wall, but, extending from the prominence, have become united with the adjoining wall and are covered with granulation tissue.

The tumor of the left side consists of a decidedly enlarged ovary, 7 centimetres long, $3\frac{1}{2}$ centimetres high, $2\frac{1}{2}$ centimetres thick, and of the tube of the thickness of a finger, which has in most part enveloped the ovary and is closely united with it. The surface of the ovarian tumor, which in great part feels solid, is uneven and shows at various points nodular cystic projections. In the middle of the convex surface is a tear $2\frac{1}{2}$ centimetres long, resulting through the bursting of the cyst filled with thick contents. Section

through the ovary shows it to be filled with a number of larger and smaller cysts containing contents which, after hardening in alcohol, show a cheesy consistence. The character of the cysts corresponds microscopically to those found in the ovarian tissue of the other side, although in this case they have reached a larger size. Section through the tube shows that its increase in size is the result of a thickening of the mucous membrane, as well as the thickening of the wall. The fimbrian end, as such, is not preserved, but is firmly united to the ovary.

Microscopical Examination.—Section through the ovarian

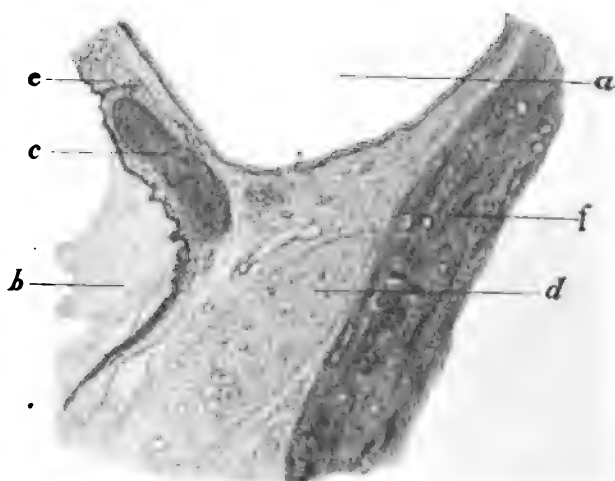


FIG. 63.—a, cyst lined with stratified cylindrical and ciliated epithelium; b, cyst lined with stratified cylindrical and ciliated epithelium which shows papillary excrescences; c, cartilage; d, bone with bone marrow and Haversian canals; e, adenomatous structures; f, ovarian tissue forming the base of the "dermoid prominence."

tissue of the right-sided tumor shows that the normal structure is almost preserved to a considerable extent. In the parenchymatous layer are numerous resting and growing follicles. At several points corpora albicantia are present, and the vessels have a normal character. The cysts prove to be follicle cysts; of especial interest is one, the size of a cherry, which shows at one point a normally embedded ovum.

The surface of the dermoid prominence (b, Fig. 62) is covered by stratified squamous epithelium which covers the surface in a rather even course, showing only at certain points rather deep depressions into the underlying tissue, so that the stroma between these depressions bears some resemblance to

skin papillæ. It should be mentioned that we are not dealing here with real papillæ, as may be seen from the entirely different arrangement of the vessels. Likewise the stain for elastic fibres shows that the latter do not, as in normal skin, send fine branches into the papillæ, but are here divided as in the rest of the tissue; we are dealing, therefore, here, not with papillary elevations of the underlying tissue, but with more or less deep depressions of the epithelium. The layers of epithelium are in this specimen less numerous than in the normal skin, yet a distinct stratum germinativum may be distinguished. Above it are two to three layers of smaller cells, which are followed by several layers of larger, smoother cells. The surface layer is being cast off and corresponds to the horny layer.

The underlying tissue consists mainly of fibrillary con-

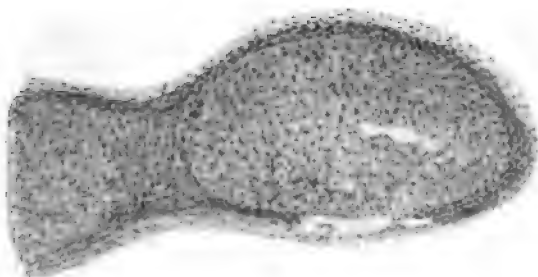


FIG. 64.—Cartilage (c) in dermoid prominence, Fig. 63.

nective tissue, between which connective-tissue cells are irregularly distributed. Vessels are not present to any considerable extent and evidence no peculiarity. Separated by this layer from the epithelium lies an extensive area of acinous (sebaceous) and sweat glands. The latter are dilated and lined with the cylindrical epithelium. The epithelia are very broad and have a nucleus situated at the base and a granular cell body. That portion of each cell directed toward the interior is round and shows a border which seems to represent cilia, but this cannot be determined positively. The cells resemble the cells lining the kidney tubules and are separated by a membrana propria from the surrounding tissue. Between these glands and the sebaceous glands are found, in addition to hair, numerous bundles of smooth muscle fibres cut transversely, and also numerous longitudinal and transverse sections of hairs and hair follicles. Two glandular structures

are present, showing a cystic character, and situated near the base of the prominence.

The boundary between these two large cysts is formed by a piece of cartilage and a group of small glandular structures. One cyst (*a*) is lined with stratified ciliated epithelium. The lowest layer forms a continuous row of very dark nuclei; the upper layers consist of somewhat longer cells, and the uppermost layer shows in part distinct cilia, between which is found the same secretion with which the cyst is filled. The other cyst (*b*) is lined with stratified epithelium which is also furnished with distinct cilia. The inner wall of this cyst, in contrast to the other, shows numerous small projections into the interior. They correspond fully in their structure to the projections in a cystadenoma papillare. In this cyst the contents, on staining, prove to be the same as in cyst *a*. Immediately under

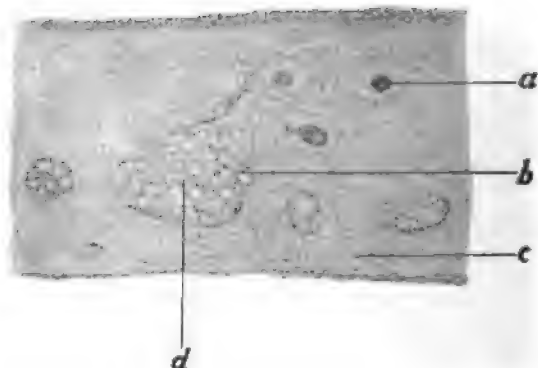


FIG. 65.—Bone (*d*) in Fig. 63. *a*, Haversian canals; *b*, marrow; *c*, bone substance.

this cyst wall is found a glandular layer which seems to go out from the epithelium of the cyst, and which surrounds a piece of cartilage (*c*) on three sides.

The glands are small and lie so closely together that scarcely any interglandular tissue is present. The epithelia are rather broad cylinder cells somewhat narrower toward the lumen, so that almost the entire interior is occupied by the epithelia and scarcely any lumen is present. The nucleus of the cells is small and lies near the base; the protoplasm is finely granular and scarcely takes on the stain. In some of the wider glands it seems as if some beaker cells were present. If a comparison is to be made with any normal gland, these structures in form and arrangement resemble very much the glands of the mucous lining of the stomach.

Near these structures are found other glandular forms which differ considerably. They are either long or quite dilated. The epithelia are small and cubical. These ducts are surrounded by a distinct longitudinal fibrous (muscular?) tissue layer. The piece of cartilage (*c*, Fig. 63) is normal hyaline cartilage surrounded on one side by fibrillary connective tissue, while on the other side the above-mentioned glands are in close contact with it.

Under the piece of bone (*d*, Fig. 63) at the base of the dermoid prominence is found a rather large layer of ovarian tis-

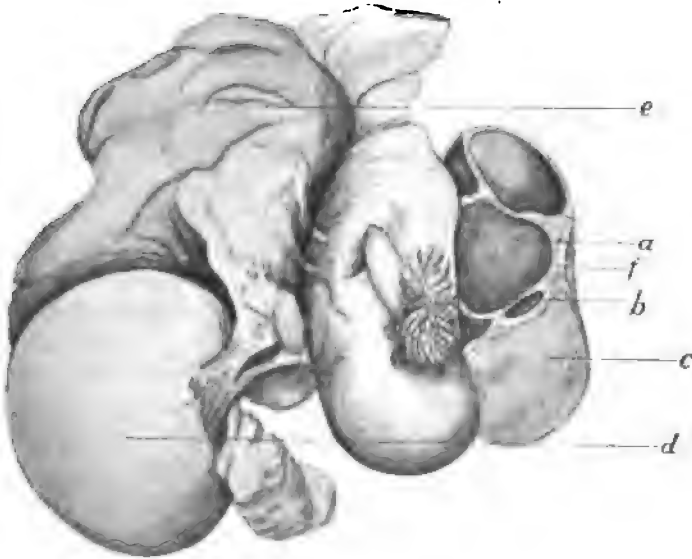


FIG. 66.—Ovarian and intraligamentous cystadenoma proliferum. *a*, cysts in the ovary with colloid contents; *b*, tube with fimbrian end; *c*, cyst of the ovary with cheesy contents; *d*, thin-walled pedunculated cyst connected with *e*, with colloid contents; *e*, intraligamentous cyst connected with hilus of ovary and showing papillary excrescences; *f*, ovarian tissue.

sue, consisting of the usual connective-tissue cells with vessels and showing no evident changes. In addition are found several follicles and a corpus luteum with regressive changes. The piece of bone shows the character of normal bone with marrow substance and has Haversian canals. Between the sebaceous glands of the surface and the cyst (*a*) is a tissue containing numerous very small nuclei and also pyramidal cells rich in protoplasm with a central nucleus. The basis of this tissue is reticular. This is a tissue which has been described by Wilms as glia tissue with ganglion cells, and which he finds in all ovarian dermoid cysts.

The other ovary contains a series of smaller and larger cysts, which prove microscopically to be follicle cysts. Dermoid structures or cysts lined with ciliated epithelium could not be found.

CASE II.—This tumor is composed of various parts, and we can distinguish the cystic degenerated ovary with an attached portion of the tube, showing its fimbrian end, from a large cystic tumor whose inner surface is partly smooth and partly lined with papillary excrescences. Attached to the latter is a pedunculated tumor with a very thin, translucent wall and with colloid contents (Fig. 66).

The cyst lined with papillary structures was intraligamentous and was so fixed by adhesions that it ruptured on removal and was rather torn. With the exception of one cyst in the ovary which contained a thick, cheesy substance, the other cysts contained colloid contents. In considering the cysts situated in the ovary, it may be observed that very little of ovarian tissue remains, for the walls of the cysts lying externally are of the thickness of paper and correspond to the albumina of the ovary. The cysts, of which the largest in the hardened specimen is still 3 centimetres long and $3\frac{1}{4}$ centimetres wide, are separated from each other by extremely thin and translucent walls. The intraligamentous tumor stands in most intimate union with the hilus of the ovary and is very large. The same is true of the round, pedunculated tumor which is connected closely with this latter cyst.

Microscopical Examination.—The dividing wall between two cysts (a) consists of a fibrillary connective tissue which is very poor in cells. Below the lining epithelium is a layer of very loose tissue followed by another layer containing numerous cells. Finally, under the latter is a layer showing myxomatous degeneration and containing numerous vessels whose walls likewise show myxomatous changes.

The epithelial lining consists of an exceedingly distinct stratified epithelium which runs partly an even course, but shows at other points distinct projections into the interior of the cysts. Under this ciliated epithelium at certain points are found bundles of transversely cut smooth muscle fibres.

The wall of the intraligamentous cyst (e) consists of a wavy, fibrillary connective tissue, which toward the inner side is poor in cells and externally is firmer and richer in cells. The inner wall is lined with a stratified ciliated epithelium which sends projections into the interior of the cyst. In the amor-

phous contents of the cyst are seen thrown-off cylinder cells with distinct cilia which are partly retained and preserved while other cells are degenerated. The contents of the cyst consist, therefore, of mucus secreted by the epithelia and of the destroyed epithelia themselves. It is evident that the epithelia were engaged in very active growth and in continued degeneration and regeneration.

The papillary excrescences of the cyst (*e*) consist of a connective tissue rich in cells, showing irregular prominences and projections as well as depressions. These are covered in part by a low and in part by a high epithelium with a nucleus

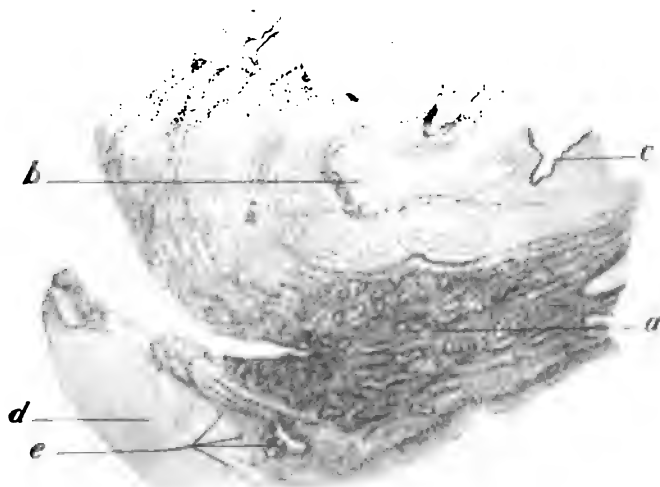


FIG. 67.—Section through the hilus ovarii near the prominence. *a*, ovarian tissue with hilus vessels; *b*, regressive corpus luteum; *c*, passage lined with squamous epithelium; *d*, fibrous new tissue; *e*, epithelial ducts (rests of the Wolffian body).

near the base. The epithelium is partly ciliated, but in most part shows beaker cells and is everywhere secreting actively. The epithelium grows more energetically than the underlying tissue, so that many depressions of the form of the *glands of Lieberkühn* are present. A myxomatous degeneration of the surface as well as of the underlying tissue is present at many points.

The contents of the cysts (*d*) are, through hardening in alcohol, of a firm consistence; the wall is so thin that scarcely anything can be seen in sections.

CASE III.—The tumor consists of the enlarged ovary and the therewith connected unchanged tube with its fimbrian end.

The ovary has the size of a hen's egg. In section it is seen that it consists of a cyst space with a wall one-half centimetre thick, which wall represents the remains of the ovarian tissue. As is the case with the outer surface of the tumor, the inner wall is fairly smooth, with the exception of an area corresponding to the situation of the uterine end of the tube, where the so-called "dermoid prominence" is present, being $3\frac{1}{2}$ centimetres long and about $1\frac{1}{2}$ centimetres high, projecting into the interior of the cyst. From this prominence extend into the cyst a

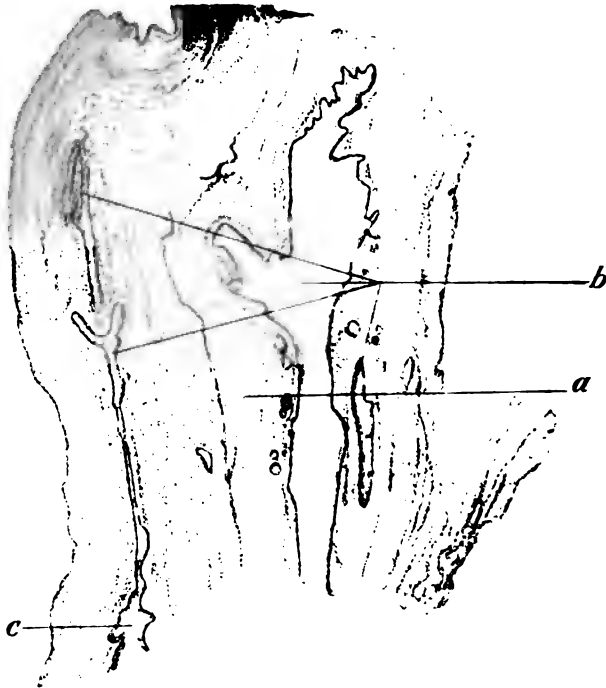


FIG. 68.—Section through a recessus or passage in the wall of Case 3. *a*, connective-tissue stroma; *b*, passages lined with squamous epithellum; *c*, a passage dividing into two parts.

large number of long, blonde hairs, the contents of the cyst consisting of the well-known dermoid cheesy substance mixed with hair. After this prominence was removed for microscopical examination, it was seen that in the cut wall of the cyst were several spaces or depressions, about two centimetres deep, from which also hair was growing.

The outer wall of these accessory spaces is very thin. The remaining portions of the entire cyst wall showed no peculiarities on section.

Microscopical Examination.—Sections through the wall of the cysts at the borders of the prominence in the hilus of the ovary show the ovarian tissue to be quite normal. The vessels are present in the usual number; the connective-tissue stroma shows many cells. Externally there appears a rather decided increase of connective tissue, while the cells have disappeared. In this fibrous formation are found sections of five ducts lined with a cubical epithelium, which must, from their position and form, be certainly considered remains of the Wolffian body (Fig. 67). The same form of ducts is found in the prominence itself.

Sections through the wall of the cyst at the edge of the prominence through the above-mentioned recesses show the stroma of the wall to be composed of a wavy, fibrous connective tissue, poor in cells, which may be considered as remains of ovarian tissue. Here we see passages entering to a considerable distance into the tissue of the wall; they are lined with stratified squamous epithelium. These passages often divide into two or three smaller passages (Fig. 68).

Near these passages are seen at certain points transverse and oblique sections of hair follicles. Other products of ectoderm, such as sebaceous glands, are not present near these passages. Fig. 69 shows such a passage by strong magnification, and we express the belief that a point such as *b* may be the beginning of a tooth formation.

Section through the dermoid prominence shows it to be united to the ovarian tissue by a pedicle. The ovarian tissue forms the base of the prominence (Fig. 70).

The prominence is covered with squamous epithelium which at certain points sends epithelial depressions into the underlying tissue.



FIG. 69.—Epithelial passage (c), Fig. 68, strongly magnified. *a*, stratified squamous epithelium; *b*, division of the duct (tooth formation?).

On the right side of the prominence the squamous epithelium passes over the pedicle to the inner surface of the ovarian tissue which forms a part of the inner surface of the cyst. On the



FIG. 70.—Section through dermoid prominence of Case 8 (explained in text).

other side the squamous epithelium (*b*) goes over into a distinct ciliated epithelium (*c*), where it shows depressions lined with

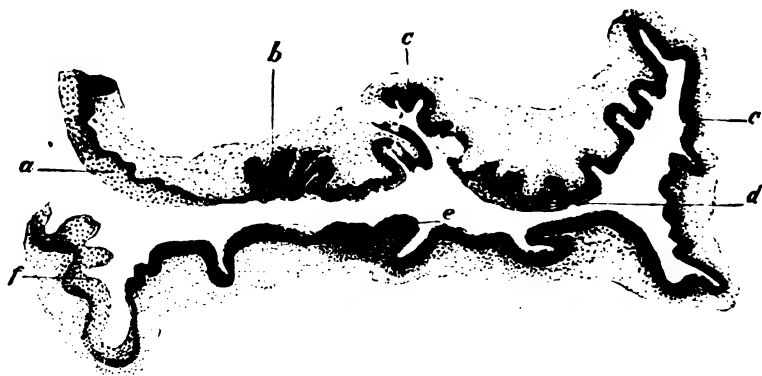


FIG. 71.—Transition of epithelium (squamous) covering the prominence in its course over the pedicle upon the ovarian basis (*g*) of the prominence (*b, c, h*, Fig. 70). *a*, squamous epithelium of the prominence (*b*, Fig. 70); *b*, cylindrical epithelium with glandular depressions; *c*, ciliated cylindrical epithelium; *d*, squamous epithelium; *e*, projections (papillary) with stratified cylindrical epithelium; *f*, squamous epithelium on the base (ovarian) of the prominence.

a stratified cylindrical epithelium containing beaker cells. On the pedicle it continues as stratified cylindrical epithelium, where a group of acinous glands (*h*, Fig. 70) have been given

off. These individual glands are lined with a cylindrical transparent epithelium with a distinct nucleus lying at the base. These glandular structures correspond fully with the glands

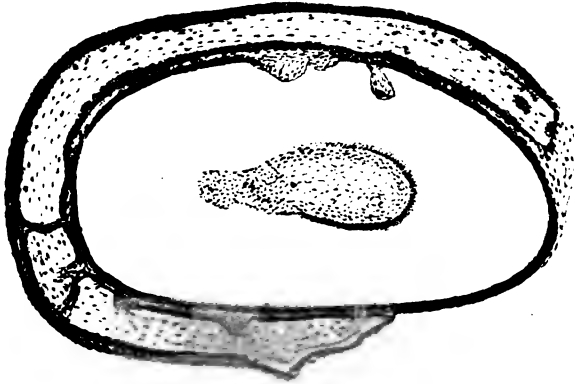


FIG. 72.—Section through tooth *a*, Fig. 70, strongly magnified.

which in Fig. 63 were described as originating from the cysts (*a*, *b*).

Further on, where the covering squamous epithelium of the

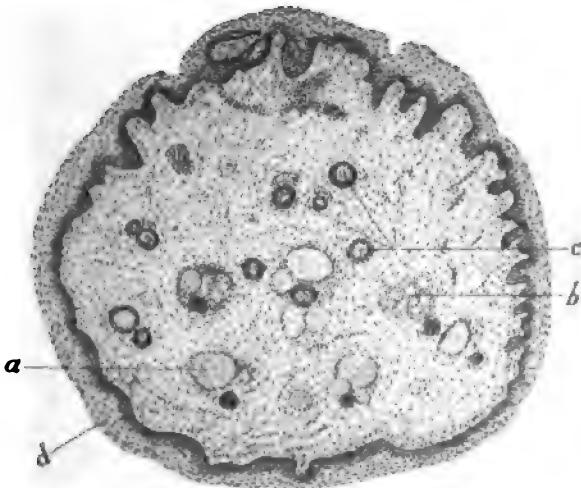


FIG. 73.—Nodule *d*, Fig. 70, strongly magnified. An island surrounded by squamous epithelium and containing sebaceous glands (*a*), sweat glands (*b*), and transverse sections of hairs (*c*).

prominence goes over upon the ovarian base, it has changed to a stratified ciliated epithelium (*c*, Fig. 71). In the prominence are found under the epithelium numerous sebaceous

glands, the above-mentioned acinous glands, fat tissue, fibrillary connective tissue, and a transversely-cut piece of bone (*a*, Fig. 70) which is surrounded by a connective-tissue layer, which in turn is surrounded by another layer of bone which shows at various points septa of connective tissue.



FIG. 74.—Epithelial ducts, like Wolffian ducts, under the epithelium of the pedicle, Fig. 70.

Around this outer layer of bone is a thin layer of connective tissue. The interior of this bone shows no Haversian canals, but, on the contrary, shows radial striation, as is found in the substantia eburnea of the teeth, so that there is no doubt that we are dealing here with a transverse section of a tooth.

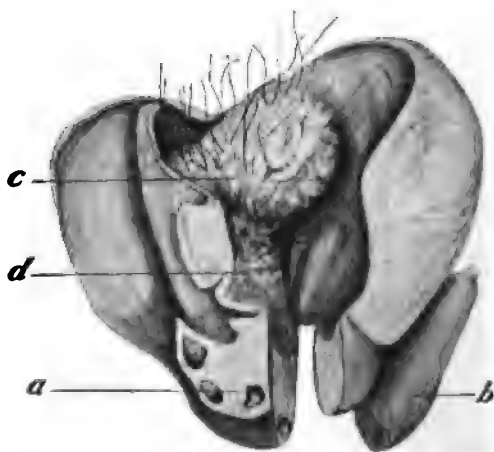


FIG. 75.—Dermoid cyst of Case 4. *a*, ovarian tissue containing small cysts; *b*, tube; *c*, dermoid prominence with hair; *d*, inner cyst wall lined with epidermis and also showing hairs.

At various points are found groups of round cells (*e*) and various bits of cartilage (*f*). In the pedicle, where the covering is composed of stratified cylindrical epithelium, are seen depressions which go over into the above-mentioned acinous

glands (*h*, Fig. 70). Here are found single and grouped ducts lined with cylindrical epithelium, which are identical with the above-mentioned remnants of the Wolffian body (Fig. 74).

At the base of the prominence in the ovarian tissue lies the nodule *d*, which is covered with squamous epithelium. In the nodule are sebaceous glands, sweat glands, and hair. Under this nodule is found a gland duct resembling that in Fig. 74, which is lined with simple and stratified epithelium. The epithelium appears to possess cilia, but they cannot be positively proven. Under the nodules are islands of round-celled lymphadenoid tissues (Fig. 70, *i*).

CASE IV.—This tumor has the size of a goose's egg. The outer surface is quite smooth, there being at certain points broad, firm adhesions which unite the tumor to the uterus and

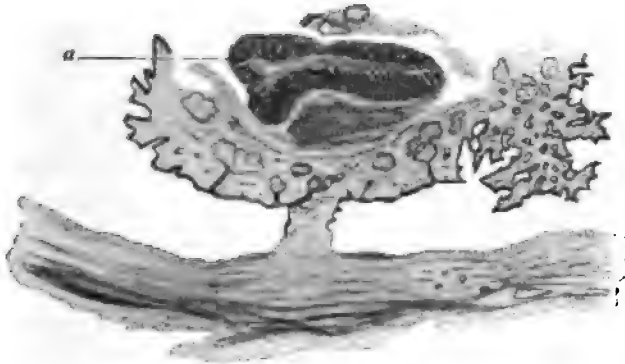


FIG. 76.—Section through dermoid prominence of Case 4. Description in text.

the intestines. In section through the tumor it is seen that that part situated near the fimbrian end of the tube presents quite a retained portion of ovarian tissue with several cysts and follicles. The dermoid cyst is seen on the under surface and shows in its interior a large extent of epidermis-like tissue. On the one side a cyst the size of a dove's egg was found between the ovarian tissue and the dermoid wall. This resembles the recesses which were described in the previous case, only that this recess is much larger. The contents are again the well-known cheesy material mixed with hair. On the inner wall is seen the elevated "dermoid prominence" covered with hair. It is seen that this cutis-like covering extends over a greater portion of the cyst interior than in the previous cases, and hair is therefore found in a large area of the inner wall. Teeth or bone are not macroscopically present.

Microscopical Examination.—The thin cyst wall at a distance from the prominence consists of fibrous connective tissue with numerous vessels, especially in the middle layer of the wall.

The inner surface is lined with a very remarkable tissue rich in cells which by weak magnification have the appearance of squamous epithelium. Strong magnification shows this layer to consist of rather large cells with large nuclei, but a sharp boundary to the cells is not present. The superficial layer seems to be covered with long giant cells, which toward their base become narrower and at their other end are much widened. In the external fibrillary tissue follicles are still present, so that it is certain that this wall is composed of ovarian tissue. The above-mentioned cell lining must be considered as newly-formed granulation tissue.

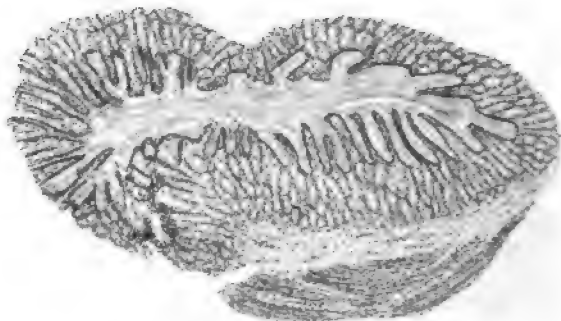


FIG. 77.—Glandular structure resembling gastric mucous membrane. Strong magnification of a, Fig. 76.

The dermoid prominence is covered by stratified squamous epithelium sending at certain points deep depressions into the underlying tissue. At numerous points are seen the excretory ducts of the sebaceous glands passing through the squamous epithelium up to the surface. At one point the covering of squamous epithelium is interrupted, and there is found a zone of strongly infiltrated round-celled tissue which has lifted off the squamous epithelium and given this area the appearance of an ulcer. On the base of the prominence the squamous epithelium passes over to the inner surface of the cyst wall in the form of squamous epithelium, while on the other side the covering changes to the above-mentioned form of granulation tissue.

The stroma of the prominence consists of a wavy, fibrillary connective tissue with numerous cells, sebaceous glands, many

hairs, fat, and cartilage which is changing to bone. In addition is seen a very remarkable glandular structure in whose interior project a number of villi (*a*, Fig. 76).

These villous projections are covered with epithelium consisting of long, narrow cells with nucleus at the base. They are surrounded by a gland layer consisting of glands cut longitudinally and transversely (Fig. 77), forming narrow tubules lined with the same epithelium as has been described in Fig. 63, *e*, and in Fig. 70, *h*.

The wall which forms the base of the dermoid prominence consists of ovarian tissue with characteristic twisted vessels; follicles could not be found. At one point is seen a fairly long cyst of triangular form. The lining epithelium of this cyst is stratified cylindrical and secretes an amorphous substance, the upper layers of this epithelium being partly thrown off. Although cilia could not be positively recognized, it is probable that such were present.

(To be continued.)

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.

Meeting of February 15, 1901.

The President, REUBEN PETERSON, M.D., in the Chair.

DR. G. KOLISCHER called attention to an improvement in

SKIAGRAPHY IN KIDNEY AND URETERAL WORK

which he had worked up in company with Dr. L. E. Schmidt. Every one who is familiar with kidney work knows that very often the incision has to be enlarged or changed because of an erroneous suspicion of the seat of the obstruction. In this method metallic sounds, which will show in a skiagram, are introduced into the ureters. The possibilities are to determine the course of the ureters, to locate an obstruction, and to decide to a certain extent upon the nature of the obstruction.

The first picture (see page 520) was taken from a test case in a cadaver, to prove that the sounds do not injure the tissue, even if they are pushed up with great force so that the catheter curls up.

The other picture (see page 521) was taken from a living subject, a young man about 32, suffering from symptoms of pyelonephritis. The outlet of the kidney, and the sound curling up in the dilated renal pelvis, are distinctly visible. The same is the case with the beak of the cystoscope. Dr. Kol-

ischer asked that this method should be employed and results reported, because, as the number of the kidney cases in one man's practice is always limited, extensive information can be gained only from a number of observers.

INTESTINAL OBSTRUCTION RELIEVED BY MASSAGE.

DR. EMIL RIES.—A woman of 39 years gave a history of



FIG. 1.

Pain in the region of the appendix, occurring for the first time eleven years ago. It recurred once or twice a year and of late more frequently, the last time on Christmas, 1900. Sometimes she was in bed during the attacks. Her menstrual

history was of no special importance. She had had three children, the last thirteen years ago, and had never been sick after labor. Twelve years ago she produced an abortion on herself with a meat-skewer, and after that was sick for months with chills, fever, and pain.

She was a fairly healthy-looking woman, five feet four inches tall, well nourished, without anything pathological in



FIG. 2.

the organs of the thorax and abdomen outside of the sexual organs and the appendix. There was a lacerated perineum, thickened uterus, the right and left appendages were not freely movable. Her temperature was 99.8° , pulse 76. She was constipated; had a good appetite.

The operation presented no particular difficulties. The appendix was removed through a median ventral incision. It was adherent to bowel, omentum, and uterine appendages; was thick and hard, but contained no pus. It was easily removed and the peritoneum of the cecum closed with catgut sutures. The uterine appendages on both sides were enlarged. The right tube was occluded, dilated, and its wall thickened. The ovary contained a good sized hematoma, but was otherwise normal. Incision of the right tube showed only a small amount of almost clear fluid, leading to the conclusion that the contents of the tube were not septic. The abdominal end of this occluded tube was amputated and stitched and the serosa stitched to the mucosa. The hematoma of the ovary was removed and the rest of the ovary closed with catgut. The left tube appeared closed and closely attached to the ovary. It was incised and the contents found to be serous. A probe in the tube passed into the ovary, showing that there was a tubo-ovarian sac. The left appendages were therefore removed and the broad ligament closed with a continuous suture. The abdominal wall was closed with one layer of catgut for the peritoneum, one for the fascia, and one of silkworm gut for the skin.

On the first day, the 24th, the highest rectal temperature was 100°, pulse 80. The patient had one-eighth of a grain of morphine at noon on account of pain. In the evening she had chloral hydrate and hot water by mouth and was catheterized. She did not vomit. On the 25th, at 3 A.M., the temperature was 99.3°, pulse 80. At 7 P.M. the temperature was 101.6°, pulse 102. On this day there was some hemorrhage from the uterus; the urine had to be drawn with the catheter in the morning, but was passed naturally afterward. Patient vomited a little tea and all the water she took. She was given an enema of an ounce each of water, glycerin, and salts, but without results. On the 26th the rectal temperature ranged from 101.4° in the morning, with pulse of 100 to 108, to 101.6° in the evening. At 11:30 the patient had slept only about two hours, although she had no pain. She felt nauseated and vomited the entire night and day after 10 A.M., the vomitus containing bile. She received that day only a little cracked ice and tea, which were also vomited. She urinated naturally. There was some hemorrhage from the uterus. She received enemas at 8 A.M. and 4 and 6:30 P.M., the last being given in the knee-chest position. At 10 P.M. the patient was vomiting, nauseated, but not complaining of pain in the abdomen, with a good pulse of between 90 and 100, respiration about 20. There was evidently some obstruction. This was about sixty hours after the operation. The patient was given one-eighth grain of morphine hypodermatically, the dressing was opened without removing the collodion dressing, and, with one finger in the vagina and the other hand over the uterus on the outside, the bowels were massaged upward away from the uterus and right appendages for about five min-

utes. Another enema of soapsuds was then given without result. Natural movements occurred three and five hours later, and two on the following afternoon. The highest rectal temperature that day was 100°, pulse 80, respiration 18. Liquid nourishment was taken without difficulty; the patient did not vomit, felt well, and sat up. Very little uterine hemorrhage. On the 28th, temperature 99.8°, pulse 84, natural bowel movements, no pain, almost no hemorrhage from the uterus. On the 29th, same temperature, natural movements then and subsequently. On February 3, ten days after the operation, the stitches were removed, primary union having taken place. The 6th of February was the first day defecation did not occur naturally. Cascara was given effectually. On the 7th the patient was discharged, the abdominal incision healed. On the right side there was a little thickening, but the left ligament was perfectly smooth and soft. The patient subsequently felt well and could perform household duties.

DR. T. J. WATKINS was reminded of a case seen with Dr. Frankenthal—a case of puerperal infection with pyosalpinx and general suppurative peritonitis. The woman had a greatly distended abdomen and ileus. After employment of the usual cathartics the hand was inserted into the rectum, a small amount of chloroform having been given, and an adhesion of the intestine to the left tube was easily detected and separated. One could possibly detect and separate intestinal adhesions in the pelvis more easily through the rectum than through the vagino-abdominal walls. Dr. Ries' report was interesting. It was questionable whether one could separate the adhesions by vagino-abdominal manipulation. It would seem to depend much upon the thickness of the abdominal wall, its rigidity, the amount of distension of the gut, and upon the firmness of the adhesions.

DR. PETERSON asked the outcome of the case.

DR. WATKINS.—The treatment was of no value, as upon opening the abdomen the suppurative peritonitis and pyosalpinx was encountered. The patient died the following day.

DR. A. H. FERGUSON was reminded by Dr. Ries' case of an abdominal section in which he had removed two cystic ovaries sixteen years ago. A small drainage tube was used, and on the second day there was some elevation of temperature. The third day the patient was worse and commenced to vomit persistently. The drainage tube was removed and a finger inserted without anesthesia. This was too painful, so abdominal taxis, which had just been brought before the profession by Jonathan Hutchinson in England for obstruction of the bowels, was tried. With sterilized oil over the abdomen, forcible abdominal taxis, without putting the fingers into the vagina or rectum, gave relief almost immediately. After lavage she felt still better, and inside of twelve hours had a movement of the bowels, and went on to uninterrupted recovery. This case illustrated the importance of massage over

the abdominal walls in early obstruction due to plastic material agglutinating the bowels together. These adhesions were very easily broken up. The suggestion of Dr. Ries to put the finger in the vagina was an improvement.

DR. G. KOLISCHER thought the whole discussion was running along a false line, because the premises were erroneous.

The main symptom of intestinal obstruction was distension above the obstruction. Dr. Ries' patient did not show this. Dr. Kolischer was rather surprised that he did not try to wash out the stomach, as often, after a laparotomy, the patient keeps on vomiting for days, while the intestines are not dilated, and the vomiting ceases after lavage. If adhesions exist which are firm enough to obstruct the intestines, to sever them by massage is dangerous because of the inflammatory changes in the intestinal walls, which become frail on account of the inflammation. He would not approve of such manipulations, even if it were certain there were adhesions. In both Dr. Ferguson's and Dr. Ries' cases there was apparently nothing but a paresis of the bowels, and in this condition any kind of stimulation might be followed by a bowel movement. The massage worked as a stimulant, and Dr. Ries did not sever any adhesion. Firm adhesions could not be divided by gentle massage, and those which are accompanied by obstruction, and at the same time would yield to finger pressure, are due to septic peritonitis, and this condition massage would not arrest. The best stimulant for intestinal paresis following laparotomy was electricity.

DR. A. GOLDSPOHN also doubted the diagnosis of obstruction from adhesion of the intestine in the case Dr. Ries reported. He had opened the abdomen to relieve obstruction three times. In the first two instances the patients died, and intestinal adhesions with a very considerable local peritonitis were found. In the third case, a vaginal hysterectomy for gangrenous intrauterine fibroid with old septic appendages, conditions were normal for a week after operation; then intestinal obstruction followed, with severe symptoms. About thirty hours after the onset of obstruction the abdomen was opened and a couple of knuckles of small intestine were found adherent to the site of a former gauze drain into the vagina, with intense redness of this and adjacent portions of the intestines, and quite an accumulation of serous fluid in the abdomen. Assuming that Dr. Ries' case was obstruction from adhesion of a knuckle of intestine to one of these stumps, these three cases would show the danger in separating such a knuckle of intestine blindly. Dr. Goldspohn might be induced to attempt it in a perfectly aseptic case, but in a case where there was any chance of infection, or where a foreign body in the shape of a drain entered the abdominal cavity, the adhesions were firmer and destruction of the bowel wall more intense, and he would not venture to do so.

DR. L. E. FRANKENTHAL stated that Dr. Ries' case was one of abdominal section and Dr. Watkins' case of vaginal. The

procedure was more feasible in the latter. To avoid such cases he had within the last few years taken a hint from Dr. Byford, and given, within an hour or so after laparotomy, a dose of calomel, unless there was a contraindication to its use, such as injury to the bowel during operation, etc. This was followed by a solution of magnesia. He believed patients are better off without morphine. He would be afraid to undertake the procedure suggested by Dr. Ries. It may succeed occasionally, but would probably do more damage than good in the majority of cases, especially where there was tympanites. If he thought there were adhesions he would prefer to open the abdomen.

DR. REUBEN PETERSON believed the diagnosis of intestinal obstruction was far from proved in this case. In all the cases of intestinal obstruction from adhesions that he had seen there had been an almost immediate elevation of pulse, which was not present in this instance. It would seem that it was a case of mild sepsis following the emptying of the tube by an incision. Though Dr. Peterson had carried out this procedure in a good many cases, he was doubtful whether this operation of opening the tube and stitching back the mucosa should be employed, unless it was reasonably certain there were no micro-organisms present. He did not think much could be accomplished for the relief of intestinal obstruction by manipulation through the abdominal wall. The abdomens he had seen opened for intestinal obstruction following abdominal operations suggested this idea. In a case of sepsis reported by Dr. Eugene Boise before the American Gynecological Society, enemas and cathartics were ordered without avail. Morphine was given, and within a few hours the bowels moved freely, and the woman went on to an uneventful recovery. Upon this case Boise based his theory that in cases of sepsis obstruction of the bowels is due to irritation and a spasmodic bowel contraction, which is relieved by a dose of morphine. In Dr. Ries' case also a dose of morphine was given and a movement of the bowels followed.

DR. RIES, in closing the discussion, said that the only way to determine whether he did break up an adhesion or not would have been an autopsy. So it was uncertain whether there was one or not. He wished to point out that in the entire pelvis there was only one point where there was probability of adhesion; that was where the right tube was opened. Everything else was covered with peritoneum. As it is unknown at the time of operation whether an occluded tube has in its contents any septic material, the possibility must always be considered that such a tube, although apparently innocent, may contain a few virulent germs. Those who have broken up adhesions in secondary laparatomies soon after primary ones would remember how very delicate they were, the mere pressure of a finger being often sufficient to destroy them. He had considered that such a condition might exist in his patient, and that manipulation of the bowel, especially against

the fixed point, made by introducing the finger into the vagina and fixing the uterus, might break up such an adhesion. The danger to the bowel in such an early case, where there was no rapid rise of pulse, where the general condition of the patient, in spite of the vomiting, was fair, seemed to be very slight. If the intestine becomes inflamed to any extent, and so weakened, micro-organisms emigrate, causing infection, intoxication, and a bad general condition. This patient's general condition was not bad, so he did not think there was any danger of rupturing the bowel. The question also was whether there was a localized peritonitis with exudate or with simple adhesion of a piece of gut to a raw surface, made in manipulating the bowels in sponging. The patient had no fecal vomiting, no dilatation of the stomach, but there were conditions, undoubtedly, where we had to deal with disturbance of the bowel function without being able to demonstrate adhesions or kinks—conditions which very probably were the consequence of some injury received during the operation. Complete obstruction was not so sharply defined that there might not be slighter or severer degrees.

DR. T. J. WATKINS read some

NOTES ON VAGINAL CELIOTOMY.¹

DR. L. E. FRANKENTHAL operated upon a case by the same or a similar method three years ago at St. Luke's Hospital. He used clamps and secondarily ligatures, running the ligatures through the vaginal mucous membrane like sutures, on account of prolapse of the vaginal walls. Having included too large a part of the vaginal mucous membrane, and thereby having destroyed its nutrition, a large part of it sloughed off. He wished to caution the members against such an error.

DR. F. HENROTIN said that it had been usual to consider a condition of hyperplasia as one not calling for surgical interference. There were all degrees and variations in the symptoms of hyperplasia of the uterus. It was unaccompanied by disease of the adnexa, occurring after inflammatory diseases or septic conditions. Many of these cases could be made comfortable by measures addressed to their general condition. True hyperplasia of a chronic type is not often followed by pregnancy. Many women were going about who, if the technical design to cure were followed out, might call for an operation, but if let alone would get along comfortably well by a little support, a little general treatment occasionally, by massage of the uterus possibly. He considered that hyperplasia, unless accompanied by complications, does not call for such radical treatment as Dr. Watkins had pursued. Curettage did not seem to have ever been used by him in the attempt to cure, or at least to modify, the condition. The symptoms, as reported, were not such as to call for radical treatment. They were common to many conditions in the pelvis and elsewhere.

¹ See original article, p. 483.

The importance of backache was overrated; very few women who have had some partially cured inflammatory disease did not complain of some pelvic pain. Many of them had metrorrhagia, which was generally amenable to treatment. The operation should be explained a little more in detail. Dr. Watkins did not say what part of the anterior uterine wall he excised. Did he make an oval excision, bringing it together from side to side, or a lateral incision, which would be difficult, and bring the uterus together anteriorly? The second case of hysterectomy he did not consider exactly the right kind of surgery. The lady had repeated metrorrhagia, was 60 years old, had ceased to menstruate five years before, went a certain time without bleeding, afterward began to have irregular bleeding. That was not a case for partial removal of the uterus. It was a mistake to leave any portion of the cervix in a woman of 60 who was having irregular hemorrhages. It was all-important that the entire cervix should be removed. Irrespective of the symptoms beyond hemorrhage, if a woman of 50 was having irregular and constantly recurring hemorrhages of unknown cause, and ordinary remedies failed to give relief, it meant at all times not only complete removal of the cervix, but of as much of the adjoining tissue as possible. In these cases the presence of malignant disease was to be feared, as had been demonstrated so many times by isolated carcinomas being found either within the walls or deep in the mucous membrane of the uterus. He did not think there was much to be gained by leaving a little of the cervix when working through the vagina. He took exception absolutely to the method of bringing out the body of the uterus through the vaginal incision, and closing the peritoneum together over a denuded cervix. It was not more safe than a complete hysterectomy. The technique of hysterectomy, putting on clamps, removing the uterus, and afterward replacing the clamps by ligatures, as described by the writer, was a matter of preference. It had been said there were apt to be fewer adhesions. He did not think so. If clamps were used and drainage employed, there were fewer adhesions than in cases closed up entirely. Applying ligatures to replace clamps was a matter of convenience, diminishing the unpleasantness and pain. When the operation had been long and tedious, and the patient had become considerably exhausted, there was danger that in placing ligatures they might slip; or if a clamp had been placed to include a large portion of the broad ligament, and an attempt were made to replace it by one ligature, the upper part of the ligature might slip and hemorrhage occur while removing the clamp and tying the ligature. Tamponing would usually control quite severe hemorrhage in these cases. The speaker did not believe that patients after vaginal hysterectomy could do better with any known method than with clamps, providing pain during the first thirty-six hours could be eliminated.

DR. KOLISCHER had understood that Dr. Watkins removed

the uterus only in cases where all other treatment failed. If the success he reported was sure and permanent, he was justified in applying this procedure in such rather desperate cases. The case of prolapse he mentioned brings up the question whether it is necessary or advisable to extirpate the entire uterus on account of the total prolapse or to perform a conservative operation. Experience taught that hysterectomy in the majority of such cases was followed by recurrence of the prolapse, so that this operation was indicated only in cases of malignant disease. In regard to leaving the cervix in order to secure better support for the vaginal fornix, many authors disagreed with Dr. Watkins and preferred not to amputate the uterus, but to attach its anterior surface to the vaginal wall, after excision of the superfluous tissue. Very often the enlargement of the prolapsed uterus was due to its displacement, and disappeared after its replacement had continued for some time.

Dr. Kolischer did not agree with Dr. Henrotin that there was less chance for formation of adhesions if clamps and drainage were used in hysterectomy. Drains of any kind were foreign bodies in contact with the intestines, and clinical and pathological experience showed that adhesions were always formed around drains. He had seen two cases where the stumps after hysterectomy had been secured extraperitoneally and the vagina closed. One of these patients died from peritonitis, the other from embolism. In neither case could adhesions be found between the intestines and the suture line. Slipping of the ligatures could be absolutely prevented by using Neugebauer's knot tier. In Schauta's clinic not one case of this kind had been observed since that instrument had been regularly applied, although a few cases had formerly been lost by insufficiency of ligatures. Dr. Kolischer could see no advantage in clamps, because there was no method of safely preventing hemorrhage when they were removed. He had seen a number of subsequent hemorrhages, some followed by death. In reference to Dr. Watkins' method of applying ligatures, there was one objection to using only four ligatures around the clamps. In this way they were applied *en masse*, which was strongly objected to by all modern surgeons.

DR. EMIL RIES stated that his experience with clamps in hysterectomy had not been unsatisfactory. Whenever possible, however, he replaced the clamps with sutures at the end of the operation. Whenever possible he brought the uterus down into the vagina and passed a row of continuous catgut sutures along the broad ligament, as in an abdominal hysterectomy. The danger of the ligatures cutting through and giving rise to hemorrhage was highly imaginary. He was not in favor of ligatures, for the reason that tissue was apt to escape between the ligatures and hemorrhage might follow.

The way in which Dr. Watkins operated certainly would preclude the danger of the formation of adhesions to the

stumps, because he attempted to pull down the broad ligaments into the vagina and cover them with the vaginal wall, leaving no raw surface. In regard to adhesions forming after clamps and sutures, I have had some experience. Dr. Ries had performed vaginal hysterectomy in a septic case, using clamps, and the patient made a good recovery. A year afterward he did ventral celiotomy for operation on the ureter, and, outside of two little bands of omentum, there was no trouble. On the other hand, he had done vaginal hysterectomy with sutures, and two years later an abdominal operation had been performed by a friend, who had informed him that the pelvic peritoneum was perfectly smooth, no trace of adhesions. The probability was that generally after clamp operations adhesions formed, but with the proper action of the bowels, with the peristaltic movement, adhesions would break up again. Removal of the clamps forty-eight hours after the operation was followed by hemorrhage. Instead of pulling out the gauze and then taking off the clamps, the clamps were first removed and then the gauze. The patient did not seem to bleed, but half an hour afterward the nurse said her pulse was not right; some oozing was arrested by packing. If the clamps are first removed and then the gauze, the thrombus might be torn out of the vessel; but if the gauze be first removed there is little danger, because the clamps hold the tissue in place.

DR. A. GOLDSPOHN thought the operation of exploratory incision and partial resection of the diseased uterus suitable for a small number of cases of metritis, fibrosis uteri, or hyperplasia. He would limit it to those not likely to become pregnant. If the cervix was markedly diseased, possibly from previous laceration and subsequent infection, a high amputation of the cervix with thorough curettement will usually suffice. The operation Dr. Watkins performed would undoubtedly cause sufficient vaginal fixation of the uterus to be disastrous in case of pregnancy. Vaginal celiotomy was a nice operation; but as so many patients had a retroversion to be cured and not merely relieved, he could not conscientiously treat them, if there was any probability of pregnancy, by any known methods for retroversion via the vagina, because these all permit the retroversion to recur after a subsequent labor, if they do not embarrass the latter. One should always be prepared to do ventral section at the same time, as the speaker did in the fifteenth case on account of a firmly fixed ovarian tumor which could not be enucleated through the vaginal canal.

With regard to supravaginal amputation of the uterus by way of the vagina, the cervix should always be taken away when it could be done without great disadvantage to the operator or protracting the operation. With regard to the technique of vaginal hysterectomy, the drainage and the forceps are harmful as foreign bodies and should be limited in their use. Dr. Goldspohn held it to be a duty to close the abdomen, at least to the extent of uniting to anterior and posterior edges

of peritoneum transversely, and drain the parametrium into the vagina with gauze. But in cases complicated by pus in tubes or elsewhere, or by extensive raw surfaces, the evil of drainage is not avoidable. Forceps and drain should be looked at as decided evils and avoided as far as possible. The technique of the use of clamps and the drain in all simple cases of vaginal hysterectomy was easy for the operator and safe for the patient for the immediate present, but for the ultimate good of the patient it was decidedly the worse method. It was not at all necessary to place clamps on the base of the broad ligament. The idea of clamping the uterine arteries seemed a blunder. The forceps were afterward in the way. Any uterine artery could be reached and ligated in any case, and there was nothing in the way. Then, after severing this firm base of the broad ligament so tied off, the uterus, robbed of its chief support, would descend in the pelvis, and the fundus could be rolled out through the small vaginal wound, avoiding the necessity of making Dr. Watkins' incision "the whole length of the anterior vaginal wall" and the corresponding interference with the bladder. It was often necessary to apply the clamp to the upper part of the broad ligament and ligate it off later, but it was rarely necessary to leave a clamp.

DR. C. S. BACON confined his remarks to the operation of opening the anterior wall of the uterus and excising a portion of it. The cases described as suitable for this operation were those in which there was enlargement of the uterus and displacement of the uterus with hemorrhage. He understood that hemorrhage was the chief indication for the operation. The enlargement, or hyperplasia, of the uterus and its displacement alone, without a pathological condition of the interior, would hardly call for operation, because there were other ways of treating both of these conditions, less serious than the operation described. These cases of hemorrhage due to a hyperplastic endometritis were often serious and led to a consideration of the necessity for hysterectomy. There was usually doubt whether there might not be malignant disease; but when pathological or microscopical examination showed no evidence of this, and there was pure hyperplasia, where curettage as ordinarily practised and the topical applications were not efficient, incising the anterior of the uterus, so as to get into the interior, was certainly worthy of consideration. Whether such an operation was not considerably more severe than an incision through the cervix, which might accomplish the same result, was questionable. The combination of dilatation and, in case of failure, incision of the cervix through the internal os far enough to admit of thorough exploration, would permit as complete application of an astringent or caustic as would the operation suggested by Dr. Watkins, and certainly it would be less serious. Superheated steam would accomplish the same purpose. Therefore the necessity for this operation, either for diagnosis or treatment of cases of metritis, would

seem hardly to exist. The combination of the incision with the vaginal suture, in cases of women who might become pregnant, would hardly seem justifiable in view of the numerous reports of the formation of firm adhesions between the uterus and cervix with serious results in childbed.

THE PRESIDENT asked Dr. Newman what had been done in Cuba.

DR. NEWMAN said that the section in Gynecology and Abdominal Surgery had a very satisfactory meeting. The papers were about evenly divided between Spanish- and English-speaking contributors. The utmost cordiality and good-fellowship prevailed.

The Cubans and others of our Spanish-speaking neighbors were looking toward us rather than the Old World for professional and scientific initiative. One of the most noteworthy papers was that on "Yellow Fever as a Mosquito-Borne Disease," by Dr. Walter Reed, U. S. A. The splendid work of Dr. Reed's commission would probably do as much toward the elimination of this scourge as the labors of General Wood have done in the sanitary regeneration of Havana and Santiago. There was a strong desire manifested to hold the next Congress in Montreal, but the absence of a representative from that city prevented. The next meeting will be held in Buenos Ayres.

DR. HENROTIN asked whether Dr. Newman was still using the angiotribe.

DR. NEWMAN replied that he was, and had recently employed it in hysterectomy for carcinoma of the uterus and the Kelsey clamp with cauterization for hemorrhoids and prolapse of the rectum. It was a very pronounced case with large bleeding vessels, varicose veins, and a badly prolapsed bowel. He was called to the patient a couple of hours after the operation and found her exsanguinated. The hemorrhage had been profuse, but examination revealed the fact that there had been no bleeding from the broad ligament, only from the hemorrhoids where the Kelsey clamp was applied. This instrument was made with a slight central projection fitting into a slot, and in opening one was apt to separate the coats of the clamped vessels. On account of this defect he had lately used the angiotribe in its place. He had as yet no case of secondary hemorrhage to record following the use of his own clamp. He did not use it indiscriminately, and occasionally fortified it with ligatures.

DR. WATKINS, in closing the discussion, said that Dr. Henrotin suggested that he advised excision of a part of the anterior uterine wall in all cases of uterine hyperplasia. He had stated distinctly that he had used it only in very severe cases. In fact, he had seen only two cases since October, 1899, in which he had thought the operation was indicated.

The method of excision varied somewhat in the two cases. In the first a strip of tissue was removed from each side of the median incision, including the greater part of the anterior

lip of the cervix, which was large and the seat of cystic degeneration. The strip was wider on the corpus than on the cervical wall. In the second case almost the entire anterior uterine wall, which comprised the enlargement of the organ, was removed; that is, the portion of the uterus that seemed to be the seat of a myoma, but in which no capsule could be found.

The operation was a minor one when compared to a hysterectomy. It was unnecessary to say that the very severe cases of hyperplasia, in which the uterus was two or three times its normal size, and which produce severe hemorrhages, anemia, and the other symptoms, were not trivial. It seemed inconsistent to speak of hyperplasia of the uterus as being a very trifling affair and later to state that it was certain to cause sterility.

In the case where supravaginal amputation was performed, Dr. Henrotin criticised leaving a portion of the cervix for fear that it might become malignant. There was absolutely no suspicion of malignant disease, otherwise this would not have been done. He also stated that supravaginal amputation through the vagina was much more difficult than a hysterectomy. This was true of hysterectomy with clamps, but for a finished operation supravaginal amputation was much easier, because there was less of a wound produced, the vaginal wall remained intact except anteriorly, and about one inch of the broad ligament remained intact. The wound involved only the upper part of the broad ligament and the cervix. Hysterectomy by clamps would not have permitted of repair of the cystocele and rectocele and would not have resulted in a cure.

As Dr. Ries had stated, adhesions almost always occur after clamps, because the operation leaves a large wound which sloughs in part and which comes in contact with the intestines. It was difficult to understand why most of the cases do not suffer from serious intestinal adhesions.

In the operation described very little raw surface was left, no sloughing resulted, and the danger of adhesions must be lessened. There was no danger of the ligature slipping, as it was passed through the tissue above and below the forceps. It would seem unjustifiable to try to control such a hemorrhage from slipping of a ligature by gauze packing. The bleeding vessel should be ligated or clamped. He believed it impossible to pack the wound tightly enough to control bleeding from a uterine or ovarian artery.

In the operation described no ligatures were left "hanging in the vagina." The ligatures were tied in the vagina, and they were removed as any vaginal suture. In other words, they were all sutures, controlling the vessels in the broad ligaments, and were removed after a week or ten days.

The writer had not stated when he used buried ligatures and when sutures, and which he preferred, because he had not decided. There was always an advantage in not using buried

sutures, if they could be avoided; and some disadvantage in controlling hemorrhage of the broad ligaments entirely by sutures, because they had to be tied so firmly that they almost invariably cut more or less through the vaginal mucous membrane.

He could see no objection to the use of two or three ligatures or sutures to control the vessels in a broad ligament, instead of many as is done in the Martin ligature operation. There was probably less danger of sloughing when few ligatures were used than when many ligatures were employed.

Dr. Watkins' opinion regarding "clamps *versus* ligatures" in hysterectomy was much the same as that given by Dr. Henrotin until he learned a simple method of hysterectomy by ligature, which required the use of but few ligatures, leaving but little denuded surface exposed in the abdominal cavity and eliminating the danger of the "ligature slipping." The element of pain after the operation, not to mention the other advantages, would induce him to abandon the clamp for this ligature method in selected cases.

The danger of complications in case of labor after incision of the anterior wall was, of course, important. By the use of the figure-of-eight ligature, so that the vaginal and uterine wounds are closed separately and the sutures removed early, there would be very little danger of complications, unless the wound suppurated and a large amount of connective tissue formed.

Dr. Bacon had suggested that it was better to incise the cervix than the anterior uterine wall. It amounted to about the same thing, because the cervix was probably best incised along the anterior wall in the median line, and in the operation described for exploration this incision would naturally not be carried any higher than necessary, and it would seldom be necessary to incise further than the internal os. It mattered little whether the peritoneal cavity was opened or not if the usual aseptic precautions were taken. The steam cauterization has, he believed, proved in the majority of instances to be unsatisfactory. Dr. Watkins believed there was much more danger of hemorrhage after forceps than after ligatures. He had had two severe cases of hemorrhage on removal of the forceps; in one it was reapplied and the patient recovered. In the other it was removed by the interne; the patient lost a great amount of blood before he was able to replace the forceps, and death resulted. In four or five cases there was considerable bleeding after the removal of forceps, which was controlled by the introduction of a large amount of gauze. The control of hemorrhage on removal of the forceps was a different proposition from its control at the time of operation, when the patient was anesthetized, when the blood vessels could retract, and before any clots had formed in the vessels.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of February 13, 1901.

The President, H. J. BOLDT, M.D., in the Chair.

A CASE OF PERSISTENT AMENORRHEA.

DR. H. J. BOLDT presented a patient that had a persistent amenorrhea since her first menstruation, which occurred at the age of 13. Until she was married—at the age of 21—she menstruated at intervals of three or four months. She married three years ago and had menstruated only twice since, the last occurring last July. The pelvic organs were practically normal. The uterus was somewhat smaller than it should be, but the diminution in size was so slight that it could hardly be appreciated.

DR. H. N. VINEBERG said that it seemed to him that the uterus was rather in a condition of arrested development, anteverted sharply and rather small. An interesting feature to be observed in these cases which he had frequently noted was that in these women with small uteri, when they married, instead of the uterus developing, as one would expect, it seemed to diminish and to entirely lose its function. There were some girls who, before marriage, menstruated every two or three months, the discharge being rather scanty, but after marriage the flow ceased entirely. This was just the opposite to what we would expect from the stimulus applied through sexual intercourse.

A FIBROCYSTIC UTERINE TUMOR REMOVED BY CESAREAN SECTION.

DR. GEORGE L. BRODHEAD presented a specimen of fibro-cystic growth of the uterus removed from a patient upon whom the operation of Cesarean section had been performed February 2, 1901, eleven days ago. The history of the case was as follows: The woman first came under his observation November 20, 1900, when she presented herself for examination in the lying-in service of the New York Post Graduate Hospital. The patient was 34 years of age, had been married two and a half years, and her menstrual history prior to marriage and up to the time of the present pregnancy had been normal in every respect. There had been no symptoms at any time of uterine growth, and the general condition was very good. The last menstruation had begun on May 6 and had continued for three days, the usual amount of blood having been lost.

Abdominal examination showed a uterus enlarged to the size of above seven-months gestation, the fundus being higher than it should have been to correspond with the period of pregnancy as based upon the date of the last menstruation—namely, six months or a little over. The presentation was vertex, the head being high above the brim and the position L. O. A. The fetal heart rate was 148, and a loud uterine souffle was heard in the right upper quadrant. The pelvis was just-minor, the woman being of small stature, about five feet two inches in height, and weighing about 109 pounds. Vaginal examination revealed a tumor the size of an orange, of moderately firm consistence, well down in the cul-de-sac of Douglas, pressing the cervix well forward behind the symphysis. Thinking that the tumor might be one of the ovary, or a pedunculated fibroid which might be made to slip back into the abdominal cavity, the patient was placed in the knee-chest position, but the growth was so adherent that it could not be replaced. The patient was extremely anxious to have a living child, and therefore section at or near full term seemed indicated. Dr. Dudley, who very kindly saw the case with him, concurred both in the diagnosis of fibrocystic growth and the advisability of performing Cesarean section. On January 19 the position was found to be L. S. A., the breech being well above the brim, and a loud umbilical souffle was heard in the left lower quadrant of the uterus. On February 2, 1901, the operation was performed at the New York Post-Graduate Hospital, the patient being within ten days of full term. It seemed best to elect this time for the reason that the abdominal walls were kept closely applied to the uterus above. An incision about six inches in length was quickly made through the uterine wall and the fetal sac opened. The breech of the child, found lying just beneath the incision, was seized, the child lifted out, and the cord clamped and cut. The amount of amniotic fluid was small. The uterus was followed down and lifted out of the abdominal cavity while the intestines were protected above. The child, a male weighing six pounds seven ounces, was born five minutes after the operation was commenced, in good condition, and soon cried lustily. The placenta was found lying loosely in the uterine cavity and was removed with its membranes manually. The tumor was adherent to the rectum, but the adhesions were soon separated and the growth lifted up out of the abdominal cavity. It was then found that during its removal the cyst had ruptured, allowing a small quantity of yellowish-brown fluid to escape. The mass was about the size of an orange and was attached to the posterior wall of the uterus by a thin pedicle about an inch and a half in width. The growth was enucleated and the uterine wall closed with several layers of fine catgut sutures. Ten minutes had been occupied in the removal of the fibroid. A finger was then passed through the cervix from the uterine side and the incision closed in layers with a continuous suture of ten-day chromicized catgut. Beginning above, the mucosa

was first closed, then from below upward the muscular layer, and finally the peritoneal coat united. The ligature was now loosened, and several sutures passed to control slight oozing. As there was a moderate amount of bleeding from torn adhesions, a strip of iodoform gauze was placed in the cul-de-sac and the end drawn out of the vagina. The incision in the abdomen was closed in layers with catgut, and the patient put to bed in excellent condition, a little less than an hour having been consumed in the entire operation and the blood loss having been very small. The child was well developed and since birth has done well. The mother's recovery was uninterrupted from the first.

UTERUS AND APPENDAGES REMOVED FROM A CASE OF TUBERCULAR PERITONITIS.

DR. EGBERT H. GRANDIN reported a case of subacute tubercular peritonitis and presented the uterus and appendages, which were removed by a suprapubic hysterectomy. The woman's abdomen had been enlarging for three months, and a preoperative diagnosis of tubercular peritonitis had been made. On abdominal section the parietal peritoneum was found enormously thickened—fully one inch. In the neighborhood of a gallon of fluid was evacuated. Every organ in the pelvis and abdomen was studded with tubercles. The appendages were adherent and the tubes contained thin pus. The hysterectomy was very difficult. After washing out the abdomen with normal saline solution, gauze was carried into the vagina. Strange to say, the woman was still draining, six weeks after the operation, by the vagina. In other respects she had gained rapidly in flesh and in appearance. Nature was evidently endeavoring to effect a cure. He had seen a number of cases of tuberculosis of the appendages in the past few years, and he regretted that he could not make a report as to the ultimate results. He had not been so fortunate as certain gentlemen seemed to be in keeping track of his pauper *clientèle*, and, therefore, he was sceptical as to the worth of many statistical deductions.

ACUTE BACTEREMIA.

DR. H. J. BOLDT reported the case of a patient who had had a criminal abortion produced by a midwife on January 16. Two days later she developed fever. The physician who was called did a thorough curetting, removing some placental débris. After the curetting the uterus was swabbed with carbolic acid. The temperature, which had been 104° F., dropped to 100°, but four days later again reached 104°, and from that time on it varied between 102.5° and 104.5°; usually it was above 103°. She was seen in consultation late at night on January 25. The pulse was 130 and the temperature was 103.6°. There was no sensitiveness on external examination, except over the uterus. The heart and lungs were normal. Bimanual examination showed the uterus somewhat increased

in size, sensitive, and the condition of the external os did not indicate the presence of foreign material within the uterus. The parametria were free. A blood culture was made the same night, although there had been no chills at any time. The examination of the blood specimen on the following morning showed a negative result. Another specimen was then taken from the median vein. At noon no positive result had yet been obtained, but it was evident that the patient was rapidly getting worse, and the source of infection seemingly coming from the uterus alone, the secretions from the interior of which showed streptococci and staphylococci aureus. Vaginal hysterectomy was decided upon and performed with the use of clamps. Time, four minutes. The patient continued to sink and died about thirty hours after the operation. Another blood culture soon after death resulted in showing a mixed infection. Streptococci pyogenes, diplostreptococci, staphylococci aureus, and bacteria coli were found in the last culture. Sections through the uterus, from the site of the placental attachment, showed the structures to be invaded quite deeply with streptococci and staphylococci. The small blood vessels were filled with pathogenic micro-organisms. He believed that an earlier operation might have saved the patient's life.

VAGINAL HYSTERECTOMY BY MORCELLATION FOR FIBROIDS.

DR. H. J. BOLDT presented a specimen removed from a woman, 43 years old, who had been suffering from atypical hemorrhages for two years, besides numerous pressure symptoms from the tumors which completely filled the pelvis. Morcellation and bisection of the uterus made the operation comparatively easy of performance. Only four ligatures were required to complete the work, during which but little blood was lost.

DR. GRANDIN protested against the term bacteremia. At the present day we were inclined to look to germs as the causative element in these conditions. We may not do so in the future. He still liked the terms septicemia and sapremia.

The specimen again proved the futility of radical operations in the presence of certain types of infection. He had reported cases here and elsewhere where he was satisfied that he was not in a position to do anything; he could not state that, in any given case, the uterus and tubes should be removed or they should not be. The reason was that we dare not operate early enough. If the doctor had operated earlier the patient might yet be alive. As yet the examination of the blood and of the local discharge is not sufficient to enable any of those present to say that the uterus and ovaries should or should not come out. He was glad to find that, after removal of the uterus, he found nothing in its cavity; otherwise he should have criticised him severely. He was satisfied that many uteri had been removed where measures of lesser type would have sufficed. In other words, he thought many of us

were carried to radical operations where we should not operate radically. At the same time he agreed that we are working along the right lines, and, although we may be sacrificing tubes and ovaries necessarily and unnecessarily, we are helping along progress in our art; but at the present day we do not know whether to operate radically in a given case or not.

DR. H. N. VINEBERG said that the case was certainly an interesting one in so far as it goes to show how uncertain we are as to the nature of these cases. The operation was performed in direct contradiction to the indications laid down by the President himself at the last meeting. Still, about a year ago he strongly condemned him for operating upon and removing the uterus in a case of acute puerperal sepsis complicated with general peritonitis, because the uterus did not show any more marked changes than the one presented to-night. The patient recovered, and it is justifiable to presume that the operation saved her life, inasmuch as other reported cases of puerperal peritonitis in which section and drainage were carried out did not recover.

A blood examination at the present time is not satisfactory, as is well shown in the case presented; while waiting for the blood examination the patient is getting beyond hope.

DR. H. J. BOLDT thought it was an instance of mistaken diagnosis on his part. He thought the infection was local, with intense constitutional symptoms, and there was no question but, if it was a local infection, the indication was removal of the uterus. The parametria were free. There were no complications in the pelvic organs. That there was such a general infection he did not know. He did not believe it, because the blood cultures taken at night were negative at noon, and the cultures in the morning were also negative. It was only the blood culture taken post mortem that showed this to be a very intense mixed infection. There were not only streptococci pyogenes and diplostreptococci, but also staphylococci pyogenes aureus and bacteria coli. Of course the present specimen shows how liable we are to error, and it should simply stimulate us to try and get on the right track.

DR. EGBERT H. GRANDIN read a brief paper entitled

NOTES RELATING TO ECTOPIC GESTATION.

His purpose was mainly to call attention again to the fact that the so-called classic symptoms, as stated in the text books, were very fallible. He exemplified this point by the relation of cases and the presentation of specimens. As a final point he emphasized the fact that a diagnosis of ectopic gestation could always be made through resort to posterior vaginal section, and he insisted on resort to this measure in every doubtful case. Cases in exemplification were reported.

DR. GEORGE T. HARRISON said that Dr. Grandin need not apologize for bringing this subject before them, for there was no department in medicine which has been such a *terra incog-*

nita as the whole subject of ectopic gestation, especially its relation to pelvic hematocele. He had been interested in the treatment suggested, but he wished first to say that Dr. Grandin was right when he stated that the previous history of these cases was often misleading and left us in the lurch. At the same time he ought to have made a clearer distinction between those cases of ectopic gestation when the ovum was dead and ectopic gestation when the ovum was living; that was an essential point. A very characteristic symptom in the latter case, to be made out by bimanual palpation, was the extreme softness of the tumor lying adjacent to the uterus; in no other condition do you find anything that approximates the peculiar softness and elasticity of the tumor; it is a means of diagnosis in itself, the nearest approach to it being a hematosalpinx and an early ovarian tumor. Now, in regard to the uterus, we find that when the ovum is dead the uterus is hard, but when the ovum is living the uterus is usually soft.

In reference to the treatment, he did not see that we gained any advantage in doing a posterior colpotomy. If it be necessary to make an exploratory incision for this condition, we had better go in by way of an abdominal incision, because he believed all these cases of ectopic gestation should be attacked through the abdominal wall and not by a posterior colpotomy. Moreover, he believed that Dr. Grandin, by implication, gave us a wrong idea of the termination of ectopic gestation. From the narration of these cases and the general tenor of his remarks, you would believe that a rupture of a pregnant tube was the usual termination of ectopic tubal gestation. That is not so; it is a very rare termination. A very frequent termination is tubal abortion; it has been estimated that at least 80 per cent of these cases terminate that way. The most frequent termination of ectopic gestation is in complete tubal abortion and hematocele. After death of the ovum the picture changes; the soft condition of the tumor adjacent to the uterus changes and becomes hard. These cases should be attacked through the abdominal wall, and he could not see the necessity of a primary posterior incision in the fornix vaginæ for the purpose of diagnosis.

DR. JOSEPH E. JANVRIN said this Society had been considerably interested in this subject for many years. He had the pleasure, before the American Gynecological Society in 1886, of presenting a paper and report of a case of tubal pregnancy which was treated by electricity for several days, and in which the fetus was killed, but the patient, however, died, two days after the last application of electricity, from rupture of an artery lying on the surface of the tube itself. At that time he very forcibly presented to the association the propriety and necessity of entering the abdominal cavity in all cases of supposed tubal or abdominal pregnancy. Again, in 1888, he presented another paper at a meeting in Washington, and at that time reported a successful case. He had had a good many cases since. For many years Dr. Grandin was op-

posed to any radical operation in these presumed cases of ectopic pregnancy and still clung to the treatment by electricity in some form. For the last six or eight years he had come around to the conclusions that many of us arrived at twelve or fifteen years ago, and he had been treating cases practically in the same way. He had listened to his narration of cases to-night with much interest. It had not fallen to the lot of many of them to see so many cases. He said that he believed that the doctor had made an error when he stated that the symptoms were not definite enough, as a rule, to enable them to decide that we had to deal with ectopic gestation. The rules which he had referred to as laid down in text books were the rules that had been laid down for years, and, as a rule, we did have generally many of those symptoms present. We have the lapse of one menstrual flow; we do have irregular flowing; we do have colicky pains; we do have severe shock accompanying these pains, and other symptoms that aid us in coming to the conclusion that there is pregnancy present. If there is no pregnancy, then there must be something wrong in the abdomen which needs to be dealt with surgically. It had always been his habit, as already expressed, to open the abdominal cavity and find out just what is there. Where we have a tubal or abdominal pregnancy, or a hematocele, he felt that he could deal with it better through the abdominal wall, and he never approached such cases through the vagina, and he could see no reason for approaching it by that route. Now, if we were confident that there was something to be removed, that there was a presumed tubal pregnancy, why not make an incision at once through the abdominal wall? The other incision was simply exploratory and tentative, and, in nine out of ten cases, if we operate through the abdominal wall, there will be no necessity of leaving an opening through the cul-de-sac for the purpose of drainage, excepting in rare instances. He thought the preliminary explorations through the vaginal wall entirely unnecessary.

DR. H. N. VINEBERG said that one of the chief points in Dr. Grandin's paper was the making of an incision in the posterior cul-de-sac for the purpose of diagnosis, and he thought it was a valuable one in certain cases. A year and a half ago he was called to see a woman who had had a cervix operation performed three years previous and whom he had not seen since. She was said to be aborting. He found the woman with all the symptoms of a simple miscarriage at an early period, and he transferred her to St. Mark's Hospital for the purpose of doing a curettage. When the patient was placed under the influence of an anesthetic a mass was found behind the uterus, and he could not say whether this mass was an ectopic or not, but, having the woman under the anesthetic, he thought it wise to explore through the posterior cul-de-sac; he found an extrauterine pregnancy and removed it through an abdominal incision. He remembered another instance; he saw

a woman in whom there was some doubt as to the exact conditions present. She had all the symptoms of an extrauterine pregnancy, and it was a question whether the small mass felt was an enlarged ovary or an ectopic sac. The consultant was in favor of curetting her and then keeping her under observation. He decided upon making a posterior vaginal section. He found a cystic ovary, which he removed through the same incision. In one experience he made use of a posterior incision which was rather an unfortunate one. Because the woman was very stout and in a very low condition, he thought he would first make a posterior vaginal section both for the purpose of diagnosis and surgical treatment. He had just made the incision and found free blood when the patient went into profound collapse, and, in spite of everything that he could do, she died within half an hour. It was his firm conviction at the time that the anesthetic (chloroform; ether had been tried, but she did not bear it well), combined with the great loss of blood through intraperitoneal hemorrhage, was the cause of death. Still, in a similar case in the future he would at once operate through an abdominal incision. The patient had symptoms of intraperitoneal hemorrhage and collapse at 3 P.M., and he could not operate upon her until 9 A.M. the next day. Dr. Mann had reported a case which he lost by making an incision through the posterior cul-de-sac. The patient bled so profusely that, before he could find and catch the bleeding vessel, the patient died.

DR. CLEMENT CLEVELAND was in perfect accord with the remarks of Dr. Harrison and Dr. Janvrin in regard to posterior section as a preliminary step for diagnostic purposes. He could see no positive advantage to be gained by the procedure, while it was apparent that there were many disadvantages. One found a mass in the pelvis, exterior to the uterus, and certainly a foreign one. The patient's symptoms would clearly indicate whether an operation was urgent. A preliminary opening through the posterior cul-de-sac would merely lengthen an operation without producing any positive good.

His experience was the same as Dr. Grandin's, but a large majority of these cases present but few of the positive diagnostic symptoms. He had now and then been misled and had diagnosed ectopic gestation where, upon opening the abdomen, some other form of disease was found to exist.

He was positively opposed to opening the posterior cul-de-sac for the removal of a tubal pregnancy. The procedure was, to his mind, too hazardous. The danger of uncontrollable hemorrhage was very great, every blood vessel was enlarged, and the field of operation was likely to be immediately obscured by a deluge of blood. He did not think that the procedure should ever be approved.

He had seen three cases during the past five weeks which presented interesting features. The first case was that of a young woman of about 28 who was pregnant for the first time.

For the past three months she had had but slight menstrual flow each month, and at different times during the period she had had a little flow with what appeared to be decidua. She had had several attacks of sharp pelvic pain up to the last month, since which time she had had constant pain and weight and pressure in the pelvis. She was sent to him from the country and entered the Woman's Hospital. Examination revealed a large mass in the pelvis to the right of the uterus, though the uterus itself could not be distinctly made out by manual examination, so densely was the whole pelvic contents matted together. From this condition and the symptoms a diagnosis of ectopic gestation was made. Upon opening the abdomen a mass was met with that could not be distinctly defined, though from the instant he felt positively that he had to deal with ectopic gestation. Directly under the incision presented the sigmoid flexure, greatly enlarged and congested and completely covering the uterus and pelvic contents. It was very difficult to find an approach to the underlying masses. He found it almost impossible to penetrate beneath the intestine without doing damage. He at last found a spot where he succeeded in making an entrance, but in doing so tore up a flap of the serous and muscular coats of the sigmoid for at least an inch and a quarter. This was at once repaired and the operation proceeded with.

He succeeded in removing the right tube with all its contents, but, of course, not without rupturing. As a necessary precaution, on account of the injury to the intestine, he found it advisable to put in posterior gauze drainage. She did well for three or four days, when, upon drawing down the gauze, a little fecal matter appeared. After that the symptoms became severe, the temperature rising to 103°, and the pulse and respiration markedly increased. He decided that vaginal hysterectomy would give the patient her only chance. This was performed, and she had done well with the exception of a small fecal fistula, which is rapidly closing. The closure was facilitated by passing a narrow strip of gauze into the fistula each day. The chief point of interest in this case was that the ectopic mass was found buried under the sigmoid flexure.

The second case was that of a woman who had all the distinct separate characteristic symptoms of extrauterine pregnancy. It proved to be a tubal pregnancy of the right side. After removal the bleeding was so great from the whole surface of the cavity where the mass had been lying that it was found necessary to pack this cavity with gauze and drain through the vagina. She was so hemorrhagic that even after very careful and firm packing she was found, several hours after the operation, to be bleeding too profusely. Possibly, in making a posterior section, he might have divided a branch of the uterine artery. Thorough tamponing arrested this hemorrhage, and she did well thereafter. This case seems to emphasize the point that he mentioned in the early part of his remarks, that the lower route is not a safe one through which to remove a tubal pregnancy.

Two weeks ago he was called to see the third case. She had been flowing quite profusely for the past month and had passed large clots of blood. A physician who was called came to the conclusion that she had miscarried, and under an anesthetic curetted her. Not being relieved, she sent for the gentleman who called him in consultation. Finding that she was flowing excessively, he came to the conclusion, from his examination, that she had aborted, but that the uterus was not entirely freed from its contents. He also curetted her under an anesthetic and scraped away what appeared to be decidua. On re-examination he came to the conclusion that there was a mass outside the uterus and that it was probably extrauterine pregnancy. He was able to confirm the diagnosis. The patient was sent to the Woman's Hospital, and, as operation did not appear to be urgently necessary, he decided to wait several days, to give her an opportunity to recover somewhat from her quite exhausting experiences.

He had no wish here to be understood as criticising what was done by these two gentlemen, for every one knew the difficulties of examining and treating a patient upon a bed in a tenement house.

On operating he found an unruptured tubal pregnancy of three and a half to four months, judging from the size of the fetus which he removed. In removing the mass he used, as a hemostat, Skene's electric clamp, which was his invariable custom in such cases. He preferred the electric clamp because the tissues in cases of this nature were so easily cut through by ligatures, and because it was such a perfect aseptic measure. This case also recovered.

DR. ABRAM BROTHERS said that most of us had met cases of this kind and had presented cases before the gynecological surgeons. In 1888 he wrote a paper on extrauterine pregnancy when the electrical treatment was in vogue. From a study of the cases at that time the results gave a fair mortality rate, less than 5 per cent. At that time the method of treatment was correct, but he was convinced that the mortality figures applied to the people who lived, but not to the number of cripples left. The present method of treatment was rational, and under modern surgical methods showed about the same mortality, but it left the women practically well. The frequency of these cases in private practice was alarming. Three years ago he made a diagnosis of 3 cases in forty-eight hours, and each diagnosis was confirmed by operation. Again, two months ago he met with 4 cases again in forty-eight hours, and he was able to confirm 3 of them on the operating table. The fourth case went to another hospital and he did not know whether she was operated upon or not. The occurrence of these cases at times was larger than we have any idea of, and was accounted for purely by coincidence. In the same way yesterday he made a diagnosis of 4 cases of appendicitis in private practice. We do see these cases frequently, especially when we are on the lookout for them. It had been his fortune to operate for ectopic gestation

in 25 or 30 cases. He was glad to hear Dr. Cleveland say he was obliged to do hysterectomy in these cases, because five weeks ago, at the Post-Graduate Hospital, he had a large ectopic gestation which was bound down by adhesions so that it was impossible to get the mass out from the adhesions without removing the uterus. This, he knew, had been done repeatedly, and many gentlemen have stated that they have not met with such unfortunate complications. If he had not taken the uterus out at the same time he would have injured the viscera, and a secondary operation would have been necessary to remove the uterus. He was interested in this and wished to know if the members of this Society have had similar experiences. The woman made a perfect recovery and had no bad results from the severe measure.

TRANSACTIONS OF THE SECTION ON GYNECOLOGY OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, January 17, 1901.

JOHN C. DA COSTA, M.D., *Chairman.*

DR. CHARLES P. NOBLE read a paper on

CANCER OF THE CERVIX AND PELVIS FOLLOWING SUPRA-
VAGINAL HYSTERECTOMY.¹

DR. GEORGE ERETY SHOEMAKER read a paper on

I. OVARIAN CYST AND SUPPURATING HEMATOCELE,
II. SALPINGITIS WITH OBSCURE LOCALIZING SYMPTOMS.²

DR. CHARLES P. NOBLE.—I remember well a patient admitted to the hospital with what was evidently an attack of appendicitis, but accompanied by a severe bronchitis. She had been twice operated upon before, and in each instance had taken the anesthetic badly. So, with the bronchitis as a complication, it was thought best not to interfere. She apparently did well for a while, but suddenly there was found an enormous abscess which the symptoms did not indicate the presence of. Upon examination it was found that this abscess filled the pelvis and extended into the abdominal cavity. The patient's bronchitis being no better, it was determined, under these circumstances, to employ chloroform as an anesthetic and to drain the abscess through the vagina. Some weeks later the abdomen was opened and the diseased appendix was

¹ See original article, p. 503.

² See original article, p. 499.

removed. The entire pelvis was full of pus, which extended to the appendix region.

I remember, also, one case in which the patient had been treated for salpingitis by an able medical man. The patient had three recurrent attacks in his hands. In her fourth attack I was called in consultation. Three physicians agreed that the patient had salpingitis, and I operated. The case was one in which the appendix was in the pelvis. The appendix was inflamed and agglutinated to the tube. In a mass of exudate were the appendix, the ovary, and tube. Under these circumstances it was impossible to make a correct diagnosis; the exudate was in the pelvis in the location where the exudate would be if the disease were salpingitis. In the appendicular region the parts felt normal on palpation. Under these circumstances it was impossible to make a diagnosis. In the case referred to by Dr. Shoemaker, where the tubes were thickened and could be definitely made out, the diagnosis was much more simple.

DR. MONTGOMERY.—I was unfortunate in not hearing all of Dr. Shoemaker's paper. The second part of it demonstrates the difficulty in determining the diagnosis of the cause of pelvic inflammation in women. Naturally, we most frequently attribute it to tubal disease; but a number of cases in my experience have demonstrated that even disease of the tubes and ovaries, particularly of the right side, may have been the result of infection from a diseased appendix. A case came under my observation at the Jefferson Hospital in which the indications of the good character of the girl precluded the probability of the pelvic inflammation having originated from the genital tract. An operation disclosed the pelvis full of pus, with involvement of the right ovary and tube, which had developed from a sloughing appendix.

The recent observation of a large quantity of pus in the pelvis of a man, with a localized accumulation upon the left side which had developed during a third attack of peritonitis, demonstrates how easily a similar condition might occur in the woman. The rupture of an ovum, and the congestion of the pelvic viscera incident to menstruation, would afford a favorable soil for the infection.

DR. BEYEA.—The described theory of the formation of a hematocele is that a slow but continued hemorrhage takes place into the peritoneal pelvic cavity, as a rule from the Fallopian tube and in tubal abortion, and collects in Douglas' cul-de-sac, forming a retrouterine hematocele. With this there may be an anteuterine hematocele, or the hematocele is formed about the tube—peritubal hematocele. Of course there may be a diffuse hematocele. The hematocele is composed of laminated blood clot, sometimes undergoing liquefaction, and the tumor is surrounded by fibrin adhesions to intestines and other structures. It would seem to me that in this case of Dr. Shoemaker's, since he noted at the operation that the hemorrhage collected beneath the peritoneum, and this or subsequent hemorrhage formed a retroperitoneal tumor,

the condition was a hematoma and not a hematocele, and it resulted from injury to the retroperitoneal blood vessels.

DR. G. E. SHOEMAKER.—In regard to the postoperative hemorrhage, I thought it was subperitoneal for the reason that the location of the induration was strongly contrasted with that of collections in Douglas' pouch which I had recently had occasion to open. In Douglas' pouch in those cases there was a round, symmetrical mass. In one case of pelvic abscess from tube leakage the mass was as large as a child's head, pointing in the vagina behind the cervix, obliterating the vagina by pressure from behind, but not involving the sides of the uterus, vagina, or rectum, as in the case reported to-night. In two other cases which I had opened recently through the vagina there was found the same definite location of the collection in the median line, as the collection was within the peritoneal cavity. Subperitoneal hemorrhage is quite possible, and we sometimes see it in operations from above where the vessel wounded is low down, particularly in extrauterine pregnancy. I have seen the whole floor of the pelvis filled with blood under the peritoneum when operating through the abdomen, and there was a great deal of difficulty in controlling the hemorrhage.

My second case was not reported as one of pelvic abscess due to appendicitis, but as a case of salpingitis with a few early symptoms of appendicitis, probably reflex. For several years I have been in the habit of examining the appendix when the abdomen was open for other causes, and in ten per cent of all cases of abdominal section I have removed the appendix also. I read a paper nearly five years ago advocating this procedure.

The differential diagnosis can usually be made between appendicitis and salpingitis by the menstrual history being abnormal in the case of salpingitis; by the bimanual examination demonstrating the normal condition of the tubes; by the lower situation of the inflammatory mass in case it is tubal—this is particularly demonstrable through the rectum; by the characteristic history of appendicitis, the short onset without the causes which would tend to produce salpingitis. The sharp onset of localized pain and muscular rigidity may be present in both conditions, but more markedly in appendicitis. Vomiting is not as common in salpingitis as it is in the intestinal lesion; while the pain is more often referred to the epigastrium or navel in appendicitis than it is in salpingitis. In the case reported the high location of the pain and tenderness at first made the diagnosis more difficult.

DR. E. E. MONTGOMERY read a paper on

TREATMENT OF PROLAPSUS UTERI.¹

DR. CHARLES P. NOBLE.—The principles laid down in the paper just read are so sound that there is left nothing but to

¹ See original article, p. 481.

agree with the propositions. The methods of operating differ in detail from those I have been in the habit of using. Before taking up the operation I might say a few words about the causes of procidentia. The general causes have been broadly referred to by Dr. Montgomery and are undoubtedly those which bring about procidentia. The three sets of causes are very important and have a great deal to do with the proper form of treatment to be applied, and, in the brief paper, Dr. Montgomery did not work out the questions. The great cause of procidentia is undoubtedly laceration or overstretching of the pelvic floor; where the pelvic floor is intact procidentia is of rare occurrence. I have seen myself but few cases of procidentia caused by increase of weight of the uterus; in one or two cases fibroid tumors have pushed the cervix down. One case occurred in a single girl, where the procidentia was caused by hard work; she habitually carried heavy bundles of carpet, and the strain forced out the uterus. The one great cause of laceration is, of course, childbirth. In practically all cases of procidentia in which the cervix descends nearly to, or to, the vulva, the cause is laceration.

In several steps in the technique of the operation for the cure of procidentia I am heartily in accord with Dr. Montgomery. Resection of the anterior vaginal wall is much superior to anterior colporrhaphy, because much firmer union is secured.

The point made by Dr. Montgomery in regard to the anterior vaginal wall being left long is of great importance. The only exception I believe to be in cases of old women who have cystocele rather than true procidentia. In such cases the anterior vaginal wall is greatly lengthened, so that if the uterus does not come down we have a chance to shorten it to the normal by performing the Stoltz operation, which shortens as well as narrows the anterior vaginal wall. In all other cases Stoltz's operation is to be condemned, because it drags the cervix forward and promotes the occurrence of retroversion. I also believe that it is a very important matter to amputate the cervix as the first step in the operation.

The operation that I employ upon the posterior vaginal wall is different from the one described by the essayist. If we are to get permanent results the principle should be followed of suturing the loose tissues of the posterior vaginal wall to the levator ani muscles, which are *fixed* by their points of origin on the pelvic bones. The principles underlying the Emmet operation best accomplish this. The modification of the Emmet operation which I have published is still better adapted to the restoration of the pelvic floor in procidentia cases.

I have seen Sanger, of Leipzig, operate as described this evening, and his results are said to be very permanent. On the other hand, if you use the Emmet operation I think it is much better, as one can use a fixed point to which to stitch the loose tissues of the rectocele. The levator ani muscle is al-

ways fixed through its attachment to the pelvic bones. Using this as a fixed point, the results obtained are much better than when the median operation is performed. It is my habit also to do a fixation of the uterus in all the cases of more than the slightest degree of procidentia, and I think that it is a valuable point in the technique. What is brought about is an anteverted uterus, which prevents the intra-abdominal pressure from falling upon the fundus of the uterus. In young women we must do a *suspension* rather than a *fixation*, because if the former were done we might have trouble in case of labor. In some cases of extensive procidentia the round-ligament operation offers better results for the same reason—i. e., it obviates trouble during labor. I have recently been working out the statistics of procidentia, and I find that I have done the Alexander operation in 7 cases of procidentia, instead of suspension. As to the permanency, the combination of resection of the perineum and suspension of the uterus gives gratifying results. Out of 125 operations by that method there have been but two instances of recurrence. Permanency of results is all that could be wished for.

The last point which was brought out—the occurrence of vaginal hernia—is an important one, but fortunately vaginal hernia is of rare occurrence. I have met with but one instance of this kind. Undoubtedly the principles laid down by the paper are sound ones. It is necessary to obliterate Douglas' pouch as described, or by filling it with gauze introduced from the vagina for subsequent removal. I should like to hear Dr. Montgomery speak further on this matter. It is much easier to speak of attempting to obliterate Douglas' pouch than to do it. This is especially true if the patient is not a favorable subject. If the patient be thin and has taken the anesthetic nicely, and the pelvis is not deep, it is not a difficult thing to do; otherwise it is very difficult.

DR. H. D. BEYEA.—I have for a number of years been very much interested in the subject of the treatment of prolapse of the uterus. I was pleased to hear Dr. Montgomery's paper, particularly because the methods he has here described are for the most part those I have always followed. The first step in the operation I have performed is an amputation of the cervix, amputating the cervix as high as possible to hasten and secure the greatest atrophy of the uterus after its position has been restored. The next step is a modified Sims operation on the anterior vaginal wall, the modification being that, instead of leaving a mucous-membrane surface, the whole surface is denuded, thus forming a triangular denudation of the anterior vaginal wall. The apex of the triangle is near the external urinary meatus, the base about a half-inch above the line of suture in the cervix. The denudation is carried deeply, so that it removes practically all of the vaginal mucous membrane and exposes the bladder wall. The lateral extent of denudation is determined by catching the vaginal wall with tenaculum forceps to the right and left of the cervix at the

greatest distance which will allow the forceps to be brought together in the median line when the uterus is replaced. Silkworm gut, carried in a curved needle with a round point, is used for suture material. The sutures are introduced transversely, care being taken to introduce them well into the bladder wall and include as much tissue as possible. After these sutures are shot the appearance is practically that described by Dr. Montgomery. Also, by this means the cervix is tilted backward, and therefore the uterine body forward. The final step is a triangular denudation on the posterior vaginal wall—practically the denudation of Hegar's operation. The denudation reaches as high or higher than the myrtiform caruncle. The apex of the triangle is well up toward the cervix. The sutures, again silkworm gut, carried in the Emmet perineum needle with round point, are introduced from above downward, outward and then inward on the right, and in the opposite direction on the left. Great care is taken to catch a large amount of the fibres of the levator ani muscle and fascia on each side—that amount which can be brought together in the median line, over the rectum, without excessive tension. When these sutures are shot a considerable amount of the upper portion of each lateral half of the levator ani muscle is brought together in the median line, forming a much more than normally strong and thick band of muscular and fascial support to the perineum. At the completion of the operation the vagina should only be sufficiently large to admit the index finger. The narrowing of the vagina in this way is of great importance; even in the rarer younger woman with prolapse the vagina is narrowed to admit but two fingers. This small size of the vagina, however, does not persist, but, after the sutures are removed and a month or two have passed, the vagina is found to be no smaller than that of a virgin. This increased size naturally results from relaxation of the muscular supports after the sutures are removed.

Four years ago I did this operation, narrowing the vagina as said, in a woman of about 33 years of age with complete prolapse. Two years afterward she became pregnant, went to term, and I delivered her. The labor was normal, and there occurred only a slight tear of the perineum, which was repaired. I saw her a few months ago and found the uterus still in excellent position.

I believe the important points of the operation are: to catch a large amount of tissue to the right and left in performing the anterior colporrhaphy, denude deeply and pass the sutures through the bladder wall, use a round-pointed needle and transverse sutures; to amputate the cervix high, make a wide and deep denudation on the posterior vaginal wall, introduce the sutures deeply as described, and bring a large amount of the fascia and levator ani muscle fibres together in the median line. By this last operation we gain a many times greater support in the perineum than is possible in any Emmet operation. Narrowing the vagina to the extent I have spoken of,

and thus bringing up more completely the supports of the pelvic floor, also has much to do with the success of the operation.

I have performed this operation alone in more than 40 cases, and I am very sure there have been no failures or return of the prolapse. We have done ventrosuspension in only two cases. These were earlier in our experience and before the perfection of the present operation. They were done to make more sure the result, and were, I believe, unnecessary.

In my opinion ventrosuspension is only indicated as an adjunct to the operation I have briefly described, in young child-bearing women where one fears to make the vagina the size of an index finger. Even here I feel it is not truly indicated, for it only makes the result a little more, and, I think, unnecessarily, positive. We have never found it necessary to obliterate Douglas' cul-de-sac nor shorten the utero-sacral ligaments. We have never seen the condition of hernia with prolapse of the uterus.

DR. G. E. SHOEMAKER.—The necessity for doing suspension of the uterus in order to gain support is often due to the presence of a retroversion, and if this retroversion is not corrected the support from below is not sufficient in severe cases. Like Dr. Noble, I have thought that occasionally mild cases would be sufficiently benefited by the Alexander operation in addition to the combined operations from below. I have recently operated upon two cases in this way. This method appears to be inferior to suspension in well-marked cases. The support from below can be best made if the anterior vaginal wall is partly excised. It is my habit to make the denudation largely with the knife handle, after a single median incision has been made through the vaginal wall down to the bladder in the direction of the uterus, downward as near to the cervix as I dare go between the ureters. The knife handle is then used to separate the bladder laterally, and the vaginal wall is cut away with scissors. Then a series of longitudinal layers of continuous suture, made with buried catgut, is placed in the cellular tissue beneath the bladder. This forms a median column and obliterates the denuded area. Over that the vaginal wall is drawn together with a running silk suture in the median line, antero-posterior; a strong column is thus formed in the median line, and, at the same time, the anterior wall of the vagina can be made horizontal and drawn as tight as necessary. No amount of denudation will produce such a strong anterior floor as can be produced by this method.

Amputation of the cervix I consider an important element in the treatment; that of itself insures a higher insertion of the vaginal wall upon the uterus and shortens the elongated tip. It also promotes involution by ligating the blood supply. I have not had occasion to do a hysterectomy for prolapse, as I have always been able to cope with the condition without resorting to this measure. But unless hysterectomy is reinforced by the plastic operations, as Dr. Montgomery has indicated, it would not be helpful in curing descent.

DR. BEYEA.—I should like to ask Dr. Montgomery if he considers ventrosuspension or ventrofixation indicated regardless of the age of the patient, therefore in elderly women as well as women in the child-bearing period. The large majority of women having prolapse of the uterus which have come under my care are well into the postclimacteric period of life. After the climacterium the uterus normally falls to the position of the second degree of retroversion, and, if not prolapsed, it atrophies to less than one-half its normal size. Therefore in these women particularly—and this represents the large majority—after the vaginal supports have been restored and the uterus replaced and atrophied, why is it ever necessary to secure the ante flexion of the uterus of the younger woman by ventrosuspension? If the plastic operations have been well done, I can see no need for subjecting the woman to the additional ventrosuspension. In my experience it has surely been unnecessary. I can appreciate, as I have said, why it is perhaps indicated in a woman who has not passed the climacterium.

DR. GEORGE M. BOYD.—The ground has been so very well and ably covered in both Dr. Montgomery's paper and in the discussion that there is little left to say. In the cases that I have operated upon, in building up the pelvic floor I have resorted to a modification of the Emmet operation, basing it upon the character of the injury that we find after delivery, often the injury extending up one or other sulcus of the vagina. In all bad cases there is caused a hypertrophic elongation of the cervix, and the importance of reducing the size of the uterus has been dwelt upon.

I notice that Dr. Noble more often resorts to fixation of the uterus. When I was associated with the doctor in the Kensington Hospital we did not fix the uterus; we were satisfied with amputating the cervix, repairing the anterior wall of the vagina, and building up the perineum. I should like to ask Dr. Montgomery whether he does all the operations he referred to at the same time, *i.e.*, both the plastic and fixation. In a case I recently operated upon I felt that it was wise to make two operations: first, to amputate the cervix and then to build up the perineum, and then to give the patient a three weeks' rest; second, to do a suspension of the uterus. In all cases in which I have done suspension I have invariably found the uterus in a retroverted position.

DR. BEYEA.—I should like to ask Dr. Montgomery if he regards a preparatory treatment of much importance. I think it is an important point to place the patient in bed for a week before operation, to keep the uterus replaced, and give large hot-water douches. The object of the preparatory treatment is to stimulate the vaginal walls to contract, and reduce the size of the hyperemic, hypertrophied, and elongated uterus. This allows us to better judge the amount of tissue to be denuded and included at the time of operation. By so doing I feel we make the result more sure.

Another important point is, to keep the patient in bed for at least three weeks, better four weeks, after operation, thus giving opportunity for more complete involution of the uterus and vagina. Also, the sutures should be left in position for three weeks at least.

DR. CHARLES P. NOBLE.—In regard to the first point raised by Dr. Beyea, as to the extreme narrowing of the vagina, I think that one advantage of doing a hysterorrhaphy is that when this is done it is not necessary to exaggerate the perineal operation. Except in young women, if the narrowing is extreme it is quite a nuisance to them in endeavoring to perform marital relations. This narrowing of the vagina is most frequently complained of in this class of operations. I have raised the point that one can do too much. On that account, and from that standpoint, it is wise to substitute the suspension operation as against the extreme resection of the posterior vaginal wall. This is especially true in patients past 40 years of age, because the older they get the less subsequent stretching occurs in the vaginal walls.

In regard to the preliminary treatment which has been referred to, this is very seldom necessary if hysterorrhaphy is included as one step in the operation; also, the patient can leave the bed at the end of three weeks. If the patients can thus shorten their stay in the hospital three or four weeks, it is a point worthy of consideration.

A point that I did not touch upon was the question of hysterectomy. I have done it in a number of cases. In one patient the question of probable cancer was involved; in one or two cases it was done because the women were extremely fat. In them I thought it wise to do a hysterectomy and fasten the stumps down. If the broad-ligament stumps are brought down and fastened to the vagina, while it does not hold the parts up so well as the hysterorrhaphy, it is better than nothing. Unless there is some contraindication to hysterorrhaphy, as the presence of a fat belly, great enlargement of the uterus, or a tumor, hysterectomy should not be done.

DR. MONTGOMERY.—It has afforded me a great deal of pleasure to have the paper which I have read before the gentlemen present so kindly and ably discussed. In considering the subject of the correction of displacements of the uterus, those cases of displacement have been regarded which produced a separation of the pelvic floor muscles, pushing the tissues laterally and practically separating them from their attachments. Thus, we frequently have the vagina rolled out, becoming separated from its attachment to the levator ani muscle and the tissues of the floor of the pelvis, and subsequently causing elongation of the cervix and the formation of a vagino-uterine prolapse. The operation I have done and the one suggested to-night on the posterior vaginal wall is somewhat similar to the section of the anterior vaginal wall, in that it is a splitting of the recto-vaginal septum. In my own experience, I believe a triangular denudation or splitting of the

wall is preferable to the Emmet operation, for the reason that we are bringing the parts together in front of the rectum which have been pushed off and separated during the delivery of the woman. We thus bring together not only the levator ani muscles, but the other muscles of the pelvic floor and perineum, forming a firm support. It has not been my custom to place the patient under a long course of preparation preceding operation. I can appreciate the fact that in complete prolapsus, where the vaginal walls are thickened, the previous confinement of the patient to bed for a week or more will result in the absorption of the thickened vaginal walls, which will render the operation more readily performed. I believe that ventrosuspension or ventrofixation is an important part of the operation in all cases in which the prolapsus is extensive. Of course, if it is only in the first degree the described excision and suturing of the vaginal wall will be sufficient to hold the uterus in its proper place. In such an operation where the prolapsus is extensive, although the uterus becomes smaller, it still remains in a retroverted position and the intra-abdominal pressure drives the uterus as a wedge downward, while its maintenance at a lower level keeps it larger and increases the tendency to the redevelopment of the displacement. Fixation of the uterus forward obviates this difficulty, as the intra-abdominal pressure drives it against the pubic bone, which prevents its further displacement. Where the prolapsus has been very marked, with relaxation of the pelvic floor or elongation of the cervix, and the vagina hangs upon it, the pelvic floor is driven down, while the fundus hangs by the attachments we have created in front. In such cases the condition is obviated by shortening the utero-sacral ligaments. I agree with Dr. Noble that in a woman with a large, fleshy abdomen the operation is a difficult one, and in some cases, where the prolapsus is marked, the utero-sacral ligament seems to have disappeared. By grasping the cervix and drawing it up the utero-sacral ligaments can be recognized, and when contracted the cervix is held up and its downward displacement prevented. In two cases I have seen, hernia followed operation upon the pelvic floor. One case was a woman operated upon at St. Joseph's Hospital, who had had an irreducible prolapse for four years. In this prolapsed mass were found the uterus, both ovaries and tubes, with a large pus collection in one tube and ovary. This collection rendered it impossible for us to do a plastic operation upon the vagina to prevent the redevelopment of the lesion. We were obliged to remove the uterus and pus tubes, reinvert the vagina, and pack the cavity with iodoform gauze. Hernia subsequently developed. In this patient I subsequently opened the abdomen and drew up the vagina from below, having first done a plastic operation upon the anterior and posterior vaginal walls. The fundus of the vagina was fastened up, then the surfaces stitched to the rectum on either side so as to obliterate the Douglas pouch and form a diaphragm at a higher level.

I have not seen the patient since this operation and am consequently unable to assert its being satisfactory. The fact that the patient has not returned, however, leads me to believe that she has not suffered inconvenience. In another patient there was a very marked prolapse; the uterus and intestines formed a large tumor. I did a plastic operation upon the anterior and posterior walls of the vagina, and a supravaginal amputation of the fundus of the uterus, after which the stump was fastened to the anterior abdominal wall. A year later the patient returned with the cervix firmly anchored to the anterior abdominal wall, but with the hernia of the intestines projecting through the vulvar outlet, which formed a tumor almost as large as that for which the original operation was done. Had we obliterated the pouch of Douglas in this patient the subsequent lesion would have been avoided. In regard to hysterectomy, in cases of women who are past the climacteric in whom there is a large amount of abdominal fat, making an abdominal operation undesirable, or in which the conditions are such as to render protracted operation unwise, I have preferred the operation of hysterectomy as detailed in my paper. The anchoring of the lateral walls of the vagina to the broad ligaments and the restoration of the pelvic floor proves a satisfactory procedure and effectually obviates the danger of subsequent hernia. I did an operation of this kind in the wards of the Jefferson Hospital this fall upon a woman 70 years of age, without the slightest difficulty in the convalescence and with a complete recovery.

TRANSACTIONS OF THE WOMAN'S HOSPITAL SOCIETY.

*Meeting of January 22, 1901.*¹

J. DOUGAL BISSELL, M.D., *Chairman pro tem., in the chair.*

DR. LE ROY BROWN read the paper of the evening, entitled
ALEXANDER'S OPERATION: A METHOD OF PICKING UP WITH
EASE THE ROUND LIGAMENT AT THE EXTERNAL
ABDOMINAL RING.²

DR. CLEMENT CLEVELAND.—There was a time when I had but little faith in the efficacy of the Alexander operation and preferred to perform ventral fixation. On analyzing my position in regard to this operation, I think I failed to perform it simply because I had become prejudiced against it. On maturer thought I decided to reverse my position, and determined to master it and see just what there was in it. At present I know of no operation that is more clearly indicated

¹ Continued from p. 421, March JOURNAL. ² See original article, p. 468.

in the anatomy of a woman's body than the Alexander operation, and one that gives such marked results in the large majority of cases.

My first operations were somewhat discouraging. It was sometimes difficult to find the ligament; now and then I tore a ligament, and once or twice I could not find either. But I stuck to it until it became an easy matter. For a long time I did it in a bungling way. In carrying the incision down to the external ring, I found it necessary to constantly put the index finger in the incision to mark just where I was, to keep from cutting too far to the right or left; otherwise it was impossible to tell whether the incision was being made correctly or not. Though I now look upon this as a bungling way of performing the operation, yet I was so successful with it in the majority of cases that I was forced to become an enthusiastic advocate of it. I always felt positive of good results in suitable cases. I kept on doing it in this way until Dr. Broun taught me how to do it properly. Since then I have not only done it with success, but with delight. It is really a pleasure to me now to do the Alexander operation in the way Dr. Broun has described. The real stumbling block in the operation, to one not familiar with it, is the superficial fascia. The operator reaches this, and, feeling through it the external ring, thinks he has reached the intercolumnar cellular membrane. He makes a slight cut in this, and out protrudes, as is described in all text books, a little knuckle of fat; thinking he has reached the ligament, he grasps this with forceps, to find that it is not the ligament and that he has merely fat in the grasp of the forceps. The trouble is, he has not cut deep enough. He has not cut down to the shining aponeurosis of the external oblique. As I have said, this has been the stumbling block of many who have essayed to do this operation. By this method of Dr. Broun, taking up layer after layer, we get down gradually to the external ring, the whole operation being chiefly done by sight, though the sense of touch is necessary. It is easy for any man who has any technical skill to do this operation in this way. It is so easy that the house surgeon will succeed in at once finding the ligaments in his first operation. I do not mean that this operation can be picked up and done by any one who has not seen it done. I merely mean that it can be easily done by one who has familiarized himself with the technique.

There are one or two points which Dr. Broun has not referred to, and, though they are possibly not germane to the subject matter of the paper, I consider them an important part of the technique. There are, of course, cases of retrodisplacement where the Alexander operation is not indicated; cases where there are firm adhesions, unless these adhesions are first broken up; then, too, in cases where the uterus is very heavy I look upon it as a rather discouraging proposition to take hold of. I have, however, operated successfully in many cases of retrodisplaced subinvolted uteri. In such

cases I consider it most important that a pessary should be worn from two to three months. When the uterus is small and freely movable the operation will always succeed, even without the use of a pessary. To be absolutely on the safe side, however, I think it is wise to always insist on a pessary.

The more I do the Alexander operation the more firmly do I become its advocate. I expect that this method, discovered and described here by Dr. Broun, will certainly make the operation popular, and that by and by there will not be one dissenting voice raised against it. I expect myself to go on performing it until my hand can no longer hold the knife.

DR. GEORGE H. MALLETT.—The paper deals more with the technique of the operation than with the indications. But since the preceding speaker has touched on the indications for the operation, I would like to say that, in my experience, the field of Alexander's operation is very limited. The operation is contraindicated in all cases where the uterus is enlarged and heavy or adherent, or where tubal or ovarian disease is present. Uncomplicated cases of retroversion are rare, and the majority of these uncomplicated retroversions can be cured by the use of pessaries. In cases that demand operation, I prefer the suspension of the uterus, because the abdominal incision permits the examination of the ovaries, tubes, and appendix, and the displacement can be corrected with more precision.

DR. ANDREW F. CURRIER.—The difficulties and uncertainties which have been mentioned as associated with Alexander's operation have tended to make the operation unattractive to many, and have prevented, in some cases at least, the mastery of the technique. The shortening of the round ligaments through an abdominal incision is so simple, and usually so satisfactory, that this also has operated with many as an argument against the more difficult procedure. The operation of shortening the round ligaments through a short abdominal incision certainly accomplishes all that the Alexander operation does; and though the risk be somewhat greater, there are also certain advantages in an abdominal incision which are not obtained in Alexander's operation. We should not expect to have success in every case by either method, for unexpected conditions and complications may arise which will neutralize the effects of even the most faultless technique. In a certain percentage of operations, by either method, the uterus will return to its former vicious position. The matter of an abdominal scar is of importance and significance with many women, and one small central scar is certainly less annoying than two lateral ones.

As a result of my own experience I feel quite satisfied with the method to which I have referred, which I have performed many times, and which was first introduced to my notice by Dr. Wylie.

DR. JAMES N. WEST.—I was much opposed to the Alexander operation when I first came to do it in private practice, on account of reasons that have since disappeared. One was the

character of the sutures used; frequently we would have sup-puration, subsequent hernia, and a return of the retroversion. With the thorough sterilization of the sutures and careful technique, as suggested by the writer of the paper, there should be no danger of hernia. When we look at the results of the Bassini operation, there seems no reason why an opening made for the Alexander operation should not be perfectly restored to its original strength. The Alexander operation has a large field of usefulness. There are certain cases in which I prefer to do a ventral suspension, but I believe that, as time goes on, I shall do more and more the Alexander operation. I do ventral suspension in all cases where the uterus is retroverted and adherent, and where it is necessary to enter the abdomen to replace it. I have done forty-five operations without a death, and it has been a most satisfactory operation in my hands. But in the cases that I have had an opportunity to examine, about 10 per cent became again retroverted, *i.e.*, the uterus dropped back.

DR. JOSEPH E. JANVRIN.—I tried to perform the Alexander operation in several instances eight or ten years ago, but with poor success, due undoubtedly to the fact that I did it imperfectly. I had not the patience to go on and perfect myself in the technique, so I continued the practice of hysterorrhaphy. I would say here that, in performing hysterorrhaphy during the past four or five years, I have used good-sized catgut almost entirely in attaching the uterus to the abdominal wall. This applies to cases in which retrouterine adhesions were broken up, as well as to cases without adhesions. The uterus was attached by catgut, using one or two ligatures, usually two. I scarify the uterine surface very slightly. The results have been very good indeed. As already stated by Dr. West, the retrouterine adhesions being done away with, these cases can be operated upon by the Alexander method later, if the retroversion recurs. The very concise and clear description of Dr. Broun's operation has appealed to me, and I shall avail myself of the first opportunity to witness the Alexander operation as done by Dr. Broun.

DR. LE ROY BROUN.—In regard to anchoring the round ligament, the method used by Dr. Cleveland and myself in his service is as follows: The suture material is either freshly boiled silk or sterile kangaroo tendon.

The suture is passed through one pillar of the ring at the upper angle. The bottom of the canal is then picked up, then through the ligament, and thrice through the pillar of the opposite side, the nerve not being included in the suture. The second suture is introduced in a similar manner. These two sutures when tied are amply sufficient to hold the uterus. The end of the ligament protruding from the canal is either cut off or dropped back into the wound, as may be preferred. If dropped back into the wound, such portion of the ligament as has been injured during the withdrawal should be cut away to prevent sloughing.

The results obtained are very satisfactory. Dr. Cleveland is entirely too complimentary in his remarks. He taught me how to do this operation. His excellent clinical results have given me a knowledge as to what could be done.

In my paper I did not attempt to take up the different indications for this operation; but, since this has been referred to in the discussion, I wish to say Alexander's operation is only indicated when the uterus is freely movable, and not when it is fixed. Alexander's operation is as applicable for a heavy uterus as it is for a light uterus; the ligament is amply sufficient to hold it up. So it does not mean that we should seek for light uteri, but those that are freely movable and free from adhesions.

So far as the question of abdominal section is concerned, I am surprised to hear such remarks made in reference to the intra-abdominal shortening of the round ligaments. I thought that the operation had been dropped. If the abdomen is going to be opened to do such an operation, I consider it better surgery to do a ventral suspension. I can see no reason why this operation should be undertaken. Where I have to open the abdomen for adhesions, I do the Alexander operation or a ventral suspension. So far as the death rate goes, in Alexander's operation there is none, but there is a death rate in abdominal section, no matter how careful you are.

Official Transactions.

H. GRAD, *Editor.*

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Stated Meeting, April 21, 1900.

The President, S. S. ADAMS, M.D., in the Chair.

DR. E. E. MORSE read a paper entitled

CEREBRAL INJURIES DURING BIRTH AS A CAUSE OF
INFANTILE MORTALITY.¹

DR. H. L. E. JOHNSON spoke of prolonged labor as a cause of death in children. Lifting the swollen anterior lip of the cervix would often materially shorten labor. In some cases in which the pains were ineffectual, opium by mouth would lessen irritability and hasten delivery. A large head and a small pelvis would not always prolong labor; frequently with a large pelvis a medium head would be slowly delivered. The relation of head to pelvis was not always the most important cause of

¹ See original article, p. 492.

prolonged labor. Destruction of the child should not be considered.

DR. T. C. SMITH had never seen a case of idiocy or paralysis following forceps delivery. He conceded that idiocy was frequently due to injury to the skull, but there were so many other causes that he thought it wrong to attribute it to forceps delivery.

DR. JOHN F. MORAN thought injuries might be prevented by ascertaining the conditions present, such as the size of the pelvis and the health of both parents. The mode of delivery should depend on what is found on examination before labor. He was a firm believer in forceps, but they should be applied only with definite knowledge of the position of the head.

DR. W. S. BOWEN emphasized the importance of applying the forceps to the head and not to the pelvis. The hand should be sufficiently introduced and the blades applied to the biparietal diameter. He always tried to feel the ear.

DR. S. S. ADAMS had not seen in the Foundling Asylum any injury that he could attribute to birth, or many cases of congenital syphilis.

DR. MORSE claimed that some of the most noted neurologists held that delivery by forceps was a cause of mental disease.

Stated Meeting, June 1, 1900.

The President, S. S. ADAMS, M.D., in the Chair.

DR. I. S. STONE showed

A TUBE AND OVARY, THE TUBE CONTAINING AN
UNRUPTURED PREGNANCY.

DR. J. WESLEY BOVÉE showed a

TUBERCULAR UTERUS AND APPENDAGES.

DR. W. S. BOWEN showed a case of

SIMPLE FIBROUS EPULIS

occurring during pregnancy. A healthy young woman, white, appeared in the eighth month of her first pregnancy with a red mass growing from near the root of a lower central incisor. It would bleed on the slightest touch, and projected above to the level of the teeth and between them. A few days after labor it disappeared without treatment, returning two years later in the same spot in the seventh month of the second pregnancy. He removed it carefully and spent some time in arresting the hemorrhage. In three days the growth was as large as before removal, and disappeared after labor without leaving any trace.

DR. J. WESLEY BOVÉE said, in reference to Dr. Stone's case, that blood pouring out of the fimbriated extremity showed that the tube was still open. It was probably an attempt at abortion. Shock and general symptoms of ectopic pregnancy

were not always due to rupture, but to hemorrhage into the peritoneal cavity. Differential diagnosis of tubal hemorrhage and ruptured tubal pregnancy was sometimes very difficult, the microscope only being positive.

DR. J. T. WINTER read a paper entitled

LEUCORRHEA.

The young and robust are naturally less liable to leucorrhea than those more advanced in life, especially if the latter possess delicate or susceptible constitutions. It is claimed that women of sanguine temperament are less liable to this complaint than those who are fair-skinned and light-haired. Women who indulge in luxurious idleness, as well as those who keep late hours, over-stimulate, drink too much tea or coffee, and who use the hot baths too freely, are almost sure to suffer from this disturbance. Evidence of its almost universal prevalence might be found in the number of its synonyms and in the variety of real or supposed remedies with which it is treated. In its mild form there is so little pain and constitutional disturbance, so little interference with uterine function or comfort of the patient, that it is almost neglected; and even in the inflammatory form, especially in young unmarried women, it is many times almost impossible to convince them of the necessity of a physical examination or of treatment. Nervous and hysterical women are perhaps more liable to this complaint than those of a more even disposition. It is claimed that location and the season of the year have considerable influence on this discharge; but I have never observed this influence, and it is usually a disease of such long standing that it is not likely to be influenced by mere change of temperature. It is not a sufficient explanation to say that the surface which yields this discharge is like those mucous surfaces which are influenced by changes of the atmosphere, and may, like them, be attacked by inflammation and increased discharge. The situation of the vagina, and its perfect defence against vicissitudes of season, would seem to answer this question; but location, atmosphere, and occupation may so modify common agents as to render them capable of producing it.

The causes which appear most capable of affecting this discharge, other than a specific one, are those which affect the system at large, such as fever, passion, too stimulating diet, gastric irritation, approach or cessation of the menstrual discharge, pregnancy, and too great venereal indulgence; as well as those from mechanical causes, as laborious parturition, use of instruments, or irritating substances applied to the vagina. Pregnancy, and any condition that produces pelvic congestion, may be considered as predisposing causes. Pregnancy acts both by producing venous congestion and edema and by increasing the activity of the secretions. Pin-worms, masturbation, and uncleanness may have a similar effect. It is claimed that, from a practical point of view, little is gained by

a knowledge of the remote cause of this disease, unless it be from gonorrhea or syphilis, and that even then, if the disease was of long standing, it would be likely to yield to the same remedies as would leucorrhea from any other cause. In many instances it will be found that the woman has a dread of ablu-tion, especially near or during her menstrual period, and it is just before or after these periods that many suffer from this affection. It is wise and proper to bathe freely at this time, preferably with warm water. The tone of all the parts, particularly the secretory membrane, will be regained and further trouble prevented. Just before or after a menstrual period the vessels on the secreting surface furnish a greater supply of fluid, and unless there be sufficient vitality to produce rupture of the vessels and the consequent natural discharge, the inflammatory action will very probably persist. This condition is not infrequently met with in young women who are recovering from some severe illness, as well as in those who are just beginning their menstrual life. Some women seem never to be free from leucorrhea, nor does it appear to affect them seriously; while in others there will be a quick and feeble pulse, a cadaverous countenance, impaired appetite, indigestion, emaciation, and perhaps amenorrhea, which, if neglected, may lead on to cough, morning perspiration, and pulmonary or abdominal tuberculosis. Children are liable to be affected with a discharge from the mucous glands of the vulva, constituting what might be termed infantile leucorrhea. Occasionally there is extension to the vagina, giving rise to a muco-purulent discharge, with heat and pain during micturition, and sometimes excoriation of the surrounding parts.

One of the most frequent causes of leucorrhea in children is the neglect of hygienic measures. Ordinarily there is no intentional neglect, but, on account of the undeveloped condition of the parts, an accumulation of hardened secretion occurs, as it does under the foreskin of a male. Reflex irritation from the rectum is a cause of leucorrhea, especially pruritus and ascari-des. In some instances the ascari-des have been found in the vagina.

Infantile leucorrhea is ordinarily a perfectly simple affection and is usually easily and promptly cured. The vagina should be thoroughly washed out at least twice a day. In some cases the mere removal of the accumulated secretion or ascari-des will be about all that is required, but in others astringents must be resorted to. Black wash, calomel, and lime water are quite efficient, especially when ascari-des are in the vagina.

It is perhaps our own fault, in not showing the mother or nurse how to use a syringe, that our cases are not more promptly cured. We may usually discover that the vulva only is washed out and that the syringe is not introduced into the vagina as directed. The vagina is the common outlet for all leucorrhœal discharges, but these, being furnished by parts

of different structure and vascularity, naturally differ not only in disease but in health. The mucus secreted by these various parts does not differ essentially from that in other parts of the body, closely resembling the white of an egg. That from the uterus is of this character, but in health the quantity is small and its secretion is continuous. The mucus from the vaginal mucosa is more abundant, more fluid and whey-like or creamy, varying in color from white to green or brown.

The vaginal mucosa resembles to a certain degree the mucous membranes in other portions of the body. Its surface appears to consist of very small papillæ, and through this surface are seen the orifices of mucous follicles or ducts, occasionally discharging large quantities of mucus. Near the external orifice of the vagina are glands, somewhat resembling those of Cowper, which discharge through their ducts a lubricating mucus. The lymphatics of the vagina are quite numerous and pass into the internal iliac and sacral glands. The chief arterial supply is derived from the vaginal branch of the internal iliac, and the nerves from the hypogastric plexus. The lesions of the vagina vary from slight inflammation of the mucous surface to extensive and deep ulceration. A copious yellowish discharge is evidence of a severe irritation or abrasion of the mucous surface.

It is a question whether leucorrhea is ever idiopathic. It would perhaps be wise to look at it as only a symptom. We may find that there is a family history of glandular or catarrhal disturbance, and that the individual herself has frequently suffered from some cutaneous, menstrual, or intestinal disturbance. Constipation with straining at stool is provocative of pelvic congestion and irritation; and not infrequently a vaginal discharge is found in women of sound and healthy constitution, but who, from indolence or debilitating habits, induce blood stasis of the pelvic organs, which, if prolonged, must result in weakened blood vessels and hypersecretion. With leucorrhea there is frequently some local lesion which may induce and perpetuate hyperemia. Flexion of the uterus may obstruct circulation, or an inflamed ovary may sympathetically affect the uterus. In many instances leucorrhea can be traced to some definite cause, as abortion, or to some such imprudence as wetting the feet, or changing heavy clothing for lighter.

Some years ago I was called to an old colored woman who had been suffering for a long while with an exceedingly offensive discharge. I removed an old rubber pessary, which had evidently been broken while in place, as the broken side was nearly buried in the vaginal wall.

In the case of a married woman, with leucorrhea lasting several years, the discharge would every little while be tinged with blood; later blood was mixed with it most of the time; finally hemorrhage would follow every physical effort. A polypus was found hanging down into the vagina. Its removal cured both hemorrhage and leucorrhea.

In a case of leucorrhea following an abortion and lasting for many months, the uterus was found to be quite large, and the os so relaxed as to readily admit the finger, with which several little velvety-like growths were found and were readily broken down. The whole of the interior of the uterus was wiped out with a strong solution of carbolic acid, which promptly cured the trouble.

Some years ago a young woman requested a physical examination before her marriage, claiming that she had had leucorrhea ever since she began menstruating, and that she had recently observed that there was no opening to her vagina. The hymen was found intact and quite tough. She now states that she had leucorrhea when she was a child, and that her little girls, one 2 years old and one 5, frequently have it for a week or two at a time. She has had it very profusely at times since her marriage, especially during pregnancies. During her third pregnancy the flow was not only abundant, but became very offensive, was of a sweetish, fresh-blood-like odor. After that confinement she had quite a serious inflammation of the eyes, very much like gonorrheal ophthalmia. The leucorrhea was quite abundant in her last two pregnancies, but not nearly so offensive as in the third.

If the patient be married, whether she be pregnant or not, a careful examination should be made; and we should not neglect to ascertain, if possible, whether any injurious practices are associated with the sexual act, for no amount of reasoning will deter some women from using every means in their power to prevent conception.

One of the worst cases of leucorrhea it has been my misfortune to treat is in a married woman who resorted to the use of sponges, covers, and injections of ice water and carbolized water, using at one time carbolic acid enough to cause a serious inflammation, after which the husband adopted the condom. In addition to chronic leucorrhea, she has every little while an acute attack, which begins with a slight itching of the vulva and interior of the vagina. Soon there is considerable heat of the parts, with a feeling of dryness, the vaginal secretion is arrested, there is pain in the back and loins, and the itching increases until, as she says, it is almost unbearable. Sometimes the sexual appetite is augmented, but if yielded to her distress is increased. There is also a frequent desire to pass water during this stage. By the third day the discharge is usually re-established and is of a yellowish appearance. The labia, vagina, and urethra are usually considerably inflamed during these attacks. These attacks usually end in less than a week, running into ordinary leucorrhea.

It is the same in leucorrhea as in other discharges which have continued for any considerable time. Whatever the original cause, it may continue indefinitely after this has been removed. Hence the leucorrhea of long standing is usually much more difficult to overcome than one of more recent date. It is not always easy, clinically, to make a positive diagnosis

between the simple and specific forms. The character of the individual will many times have to be taken into account, and a bacteriological examination—which it is not always wise to make, as it may arouse suspicion in either the husband or wife—may be necessary. In some women of undoubted purity leucorrhea is sometimes so acrid, especially just after the menstrual period, as to cause inflammation in the husband.

DR. T. C. SMITH took exception to some of the essayist's statements. In infants and very young girls the discharge was usually from the vulva, not from the vagina. There were cases of vaginal leucorrhea in old maids from vaginal congestion due to ungratified sexual desire. Nervousness, anemia, and ill health from any cause would keep up, but not cause, leucorrhea. Leucorrhea was not a disease in itself, and the cause must be ascertained and treated.

DR. J. W. BOVÉE said leucorrhea was a symptom of some pathological condition, a discharge from relaxed tissues due to general weakness or some irritating substance in the vagina. Such a discharge showed a condition which should be looked for. In infants it was usually vulvitis.

DR. G. N. ACKER asked how many of these cases in children might be specific.

DR. S. S. ADAMS said vulvitis in infants might be caused by the repeated use of unwashed napkins. Another cause was pressure by tight drawers. Cleanliness and the use of a solution of boracic acid over the vulva was usually the only treatment required.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

Meeting of October 4, 1900.

The President, MR. ALBAN DORAN, in the Chair.

ADENOMA OF THE BODY OF THE UTERUS.

DR. HUBERT ROBERTS read notes of a case of cancer of the cervix associated with an adenomatous growth of the fundus. The patient was a multipara of 38 years of age who had advanced cancer of the cervix, the history dating from about four months before her admission. Except for discharge and hemorrhage, the patient was in good health. Though not a favorable case for vaginal hysterectomy, this was performed on March 12, 1900. The patient recovered well and is still without recurrence.

The interest of the case is centred in the specimen, which

showed a uterus with advanced cancer of the cervix associated with a curious growth in the fundus uteri, which proved on microscopical examination to be of an adenomatous nature, and to have no connection with the columnar-celled epithelioma of the cervix.

DR. HUBERT ROBERTS first discussed adenomatous growths occurring in the cervix uteri, the simplest forms being erosion, mucous polypi, and the follicular hypertrophy of pregnancy. There are also some rare cases of true adenomatous tumors, which are sometimes almost indistinguishable from columnar-celled carcinoma.

As regards adenoma of the body of the uterus, he considered that great confusion existed. Endometritis, so-called, is a misleading term, for although a true septic endometritis exists, many conditions called endometritis, associated with overgrowth, are really adenoma, some apparently simple, others verging on malignancy if they recur.

Reference was made to adenoma malignum in which glandular elements invade the muscular tissues of the uterus. Such growths were clinically malignant. Mere curettings in adenoma are untrustworthy, and he looked upon recurring adenomatous growths in the body of the uterus, in old women, with grave suspicions.

THE PRESIDENT said that it was clear that two different forms of new growth had developed in the same uterus. The tumor in the body was a pure adenoma according to its microscopical appearances, but to the naked eye it looked malignant. Much remained to be learned about the earliest stage of cancer of the uterine body.

DR. A. H. N. LEWERS said he had met with a case presenting all the characters clinically of cancer of the cervix, in which the microscopic examination merely showed large cavities lined by a single layer of columnar epithelium. Supravaginal amputation of the cervix was performed. For a time the patient remained well, but about a year after the operation the disease recurred in the scar, and before long there was a large, typically malignant ulcer at the top of the vagina.

As regards the cause why the uterus was fixed in advanced cancer, Dr. Lewers believed the principal cause was extension of the malignant growth to the tissues in the neighborhood. This seemed proved by cases where, as the impairment of mobility was only slight, an attempt was made to remove the uterus. In several such cases the operation revealed infiltrated tissue beyond the uterus at the situation where the mobility of the uterus appeared to be checked.

DR. W. S. A. GRIFFITH remarked upon the nature and significance of periuterine indurations in cases of presumably operable uterine cancer.

DR. AMAND ROUTH said he believed that any definite growth developing from the lining membrane of the uterine

body after the menopause tended to become malignant and should be treated as such. He instanced a case of recurrent papilloma, innocent microscopically, in which after hysterectomy the growth was seen to have deeply invaded the muscle of the uterus. He did not consider that hysterectomy was justifiable if the broad ligament or utero-sacral fold were indurated, for, as all the disease could not be removed, the growth was sure to progress.

DR. HERMAN could not agree with Dr. Griffith that fixation of the uterus in early cancer was often due to adhesions. He agreed with Prof. Sinclair, of Manchester, that the usual direction of extension of uterine cancer was into the cellular tissue of the utero sacral ligaments. The situation of the induration due to spread of cancer in this direction was different from that of induration from pelvic peritonitis. In some doubtful cases in which he had commenced operation, but found that there was too much extension of cancer laterally for the operation to be completed, he had opened Douglas' pouch and found it free from adhesions.

He had seen cases of large adenomatous polypoid growths in the uterus recurring again and again after removal, and the microscopical signs of such growths were distinctive; they were not solid, friable tissue like cancer, but pulpy, gelatinous, translucent stuff. When such recurrence took place more than once, he thought hysterectomy indicated.

DR. HERBERT SPENCER thought the report of the case a most valuable one. It clearly showed the association of a simple adenoma of the body with cancer of the cervix. He had no doubt that these adenomata had often been described as secondary deposits of cancer. Ruge and Veit's case¹ was, in his opinion, erroneously so described. Cases of simple adenoma of the body had often been removed for cancer. He had met with simple adenoma in old women, even recurring after curetting, and yet the patient remaining well and the uterus atrophying after as long as six years from the second curetting. The diagnosis between these cases and cancer was often very difficult.

In reply DR. HUBERT ROBERTS said he thought that in Dr. Lewers' case of suspicious recurrent adenoma of the cervix hysterectomy would have been a better proceeding than supra-vaginal amputation. He criticised Dr. Griffith's remarks, and thought it was impossible clinically to decide whether fixation of a malignant uterus was inflammatory or cancerous, and he considered that if the uterus could not be drawn down by traction with a volsella, owing to parametric invasion, it was unsuitable for operation. He considered vaginal hysterectomy was the best treatment for recurring adenoma of the body of the uterus in old women.

DR. G. ERNEST HERMAN read a paper on

¹ "Krebs der Gebärmutter," Fig. 34.

SUBCUTANEOUS SYMPHYSEOTOMY,

pointing out the advantages of the subcutaneous operation, especially as regards its simplicity, quickness, small risk of sepsis, insignificant hemorrhage, absence of a gaping wound and of a subsequent scar.

He urged that if the maximum benefit from symphyseotomy is to be secured it should be done under the most favorable conditions. It ought not to be postponed until the necessity for some kind of operative delivery had been demonstrated by the complete failure of the natural powers. The accoucheur should ascertain the size of the pelvis before labor, and estimate also the size of the child. If he decide upon symphyseotomy, it should be done at the most favorable time—that is, immediately after full dilatation of the os uteri. The frequency with which, in contracted pelvis, the membranes rupture prematurely will make the dilatation of the cervix with Champetier's bag usually advantageous.

The author pointed out that the one risk at present inseparable from symphyseotomy is that of injury to the urethra, and that this is likely to happen in cases in which an attempt is made to deliver by symphyseotomy a child too large to be delivered in that way, and thus the pubic bones are excessively separated. This is to be guarded against by carefully estimating the size of the child beforehand.

DR. W. S. A. GRIFFITH described an

EASY METHOD OF ASCERTAINING THE RELATIVE SIZES OF THE FETAL HEAD AND THE MATERNAL PELVIS.

The woman was made to sit on the edge of the bed, at such an angle that the long axis of the fetus was vertical. The fetal head, if smaller than the pelvis, would then spontaneously dip into the cavity owing to the weight of the fetus being free to act. He discussed the relative indications for induction of premature labor, symphyseotomy, and Cesarean section in cases of contracted pelvis. ■

DR. LEWERS said he had seen some of the operations described in the paper, and he regarded subcutaneous symphyseotomy as a great improvement on the method involving a large open wound. It was not applicable, however, in all cases. In his own case of symphyseotomy, for instance, there was a sort of "bite" or dovetail at the middle of the joint, and a saw had to be used before the joint surfaces could be separated. His case had incontinence of urine for some weeks after the operation, but ultimately recovered complete control in this respect, and micturition was now quite normal.

DR. HERBERT SPENCER thought the subcutaneous method recommended by the author had advantages over the open method, but it was to be remembered that many cases of severe hemorrhage from division of large vessels had been recorded, and this had led some authorities to advocate the open method

and packing the wound with iodoform gauze. Wounds in the vagina were also very apt to occur, and if these communicated with extensive effusions about the pubes the danger of sepsis would scarcely be diminished by the subcutaneous method of dividing the joint.

In reply DR. HERMAN said he was much interested in the method of ascertaining the relative size of pelvis and child described by Dr. Griffith, and hoped to put it in practice. He had included lacerations of the vagina in the injuries of the urethra of which he had spoken, for lacerations of the urethra usually affected the vagina also, and a laceration of the vagina so slight as not to reach the urethra was not important.

Meeting of December 5, 1900.

The President, MR. ALBAN DORAN, in the Chair.

DR. W. J. SINCLAIR read

A CONTRIBUTION TO THE DIAGNOSIS AND TREATMENT OF
RETROFLEXION OF THE GRAVID UTERUS.

In a typical case of retroflexion of the gravid uterus he pointed out that the symptoms produce a *tout ensemble* which is quite characteristic and should make diagnosis easy and certain. The striking constant feature is irritability of the bladder with more or less retention of urine.

The contributions to the journals on the diagnosis and treatment of the condition have a tendency to exaggerate the frequency of complications, and the literature of the subject seems to indicate a too ready resort to operative treatment.

The special method of treatment which was advocated in the paper is extremely simple. It consists essentially in the introduction of a watch-spring pessary, care having previously been taken to empty the bowel and bladder. After the introduction of the pessary, if the patient is made to rest on her side, lying over with her face downward as far as she can with comfort, it will be found that the action of the pessary alone restores the uterus to its normal position in a few hours. Illustrative cases are given. The whole number of cases in which the method of treatment has been tried by the author is fifteen. These have been consecutive, and in all the method of treatment has been successful.

One case is mentioned in which the watch-spring pessary treatment was adopted owing to a misunderstanding in a case of fibroid tumor attached to the fundus uteri, which had fallen back into Douglas' space and produced the bladder symptoms of retroflexion of the gravid uterus. In this case the action of the pessary raised the tumor into the abdominal cavity.

The question of retroflexion of the uterus as a cause of abortion was mentioned incidentally. Abdominal section or any severe method of treatment of retroflexion of the gravid uterus was deprecated.

Ventrofixation after abortion and involution was recommended in cases of adherent retroflexed uterus.

THE PRESIDENT agreed that retention of urine and irritability of the bladder were very important symptoms for diagnostic purposes. Of recent cases Konrad's. of Budapest, was interesting. Relief came too late. Sloughing of the mucous membrane of the bladder and death followed abortion, which occurred three days after reduction of the uterus. He had referred at the April meeting to Unterberger's case, where the displaced pregnant uterus obstructed the bladder and forced open the urachus. Lastly he dwelt on Gemmell's case, at Liverpool, where a woman was seized with abdominal pain and retention of urine at the third month, and backward displacement of the gravid uterus was suspected. The mass in the pelvis, however, was found to be a fibroid, which was enucleated through an abdominal incision. Pregnancy continued to term. As to difficulty in keeping the reduced uterus in place, the President referred to Szanto's case, where the displacement was attributed to relaxation of the supports of the uterus, caused by typhoid fever; the uterus was replaced manually. Under such circumstances recurrence of the displacement was no doubt very probable.

DR. INGLIS PARSONS had found that the air-ball pessary answered very well. He preferred this gradual method to the more rapid method of manual reposition, because it was less likely to produce abortion. Cases of retroversion bound down by adhesions were not at all common; he had never come across a case of this kind in which pregnancy had occurred. If confronted with this complication he would prefer to open the abdomen, free the adhesions, and hope the pregnancy would go to term.

DR. GALABIN said that he thought Prof. Sinclair's paper was valuable in calling attention to a mode of treatment the value of which would seem not to have been duly appreciated, provided that it proved as successful in the hands of others as in those of the author.

He did not think, however, that this treatment ought to supersede the even simpler one of immediate taxis. He was accustomed to place the patient in the knee-elbow position and apply pressure to the fundus, first from the vagina, then, if that failed, from the rectum. His experience was that an anesthetic was not required in one case out of twenty. He had been accustomed twenty-five years ago to restore retroversions of the gravid uterus in the out-patient room without even admitting the patients to the hospital. In some cases, however, an anesthetic alone rendered the taxis practicable. He had never finally failed to reduce a uterus, nor had found it necessary to induce abortion, and for many years had employed nothing but immediate taxis. His experience, therefore, strongly confirmed Prof. Sinclair's view that firm adhesions in connection with retroversions of the gravid uterus are very rare. He had not found abortion follow immediate taxis, but

had known it to occur during the use of elastic pressure. He had not employed the watch-spring pessaries as a primary treatment, but had always employed them both for keeping up the uterus when restored and in cases in which the restoration at first did not appear quite perfect. In future he should certainly try the plan when restoration could not be effected without an anesthetic.

As regards the mechanism of the pessary, he attached even more importance to a leverage which Prof. Sinclair had not mentioned than to the one which he did mention. This resulted from the traction on the cervix produced by stretching backward the posterior vaginal fornix. In this case the uterus itself was the lever, the fulcrum was the position of the internal os, where the uterus is most fixed by its ligaments; and the dragging of the cervix backward tended to tilt the fundus forward.

DR. DRUMMOND ROBINSON referred to a case of incarcerated retroverted gravid uterus which he had seen when he was clinical clerk to the late Dr. Matthews Duncan. Patient, *æt.* 24, pregnant for the first time, had retention of urine on November 6, soon followed by constant dribbling of urine. On November 28 nine pints of ammoniacal urine were drawn off by catheter. On December 6, after many unsuccessful attempts to replace the retroverted gravid uterus, Dr. Duncan induced abortion. On December 5 protrusion and redress of the umbilicus was noticed, and a few hours afterward offensive urine began to ooze from it; this continued until the patient's death on December 20. The mucous membrane of the bladder began to slough and to be passed per urethram soon after patient's admission to hospital.

At the postmortem examination the mucous membrane of the bladder was almost completely absent, and the bladder communicated with a fistula at the umbilicus. The uterus was not adherent in Douglas' pouch. The right broad ligament contained an abscess. Dr. Duncan stated that he had never previously been obliged to induce abortion for this condition.

DR. BOXALL thought that we were much indebted to Prof. Sinclair for drawing attention to the fact that abdominal section or any severe method of treatment is rarely called for. For his part, he had never met with a case which would not yield to well-directed pressure, and he doubted if any one present had met with a case which necessitated even puncture before the uterus would be replaced. He regarded chloroform as useful in enabling the reduction to be effected with less force and consequently with less danger of producing abortion than when no anesthetic was given.

DR. EWEN MACLEAN cited a case of retroverted gravid uterus at the fourth month in a primipara. The symptoms were urgent, and, the usual manipulations failing, the patient was admitted to hospital with a view to the administration of an anesthetic. After left decubitus, however, for several

hours, the uterus suddenly reduced itself into its normal position.

DR. E. RUMLEY DAWSON read a paper on

THE ESSENTIAL FACTOR IN THE CAUSATION OF SEX :
A NEW THEORY OF SEX.

The ovaries normally discharge ova independently of each other, probably working alternately. The proof is that the number of cicatricial depressions, the result of ruptured Graafian follicles, are nearly equal in each ovary, and together they equal the number of menstrual periods passed.

Normal single pregnancy is the result of the fertilization of an ovum from one ovary only, by the combined secretion of both testicles; therefore the male parent does not influence the sex of the coming child.

The sex of the child depends upon which ovary supplied the ovum fertilized—if the right, a male; if the left, a female.

He quoted cases of ovariectomy where one ovary only was removed, the subsequent pregnancy giving a child corresponding in sex to the ovary which is not removed (see Dr. Wetherell's and Dr. McKerron's cases).

He also gave cases of tubal pregnancy where by operation a male fetus was removed from the right tube, the corpus luteum being in the right ovary; and, *vice versa*, where a female fetus occupied the left tube, the corpus being in the left ovary.

Cases were quoted to show that the affected tube in tubal pregnancy and in tubal moles was generally on the same side as the corpus-luteum-bearing ovary.

Cases where either tubal or cornual pregnancy occurs on the opposite side to the corpus-luteum-bearing ovary are unusual, and explained by two theories, viz.:

a. The grasping, by the tube of one side, of the ovary of the opposite side.

b. The transmigration of ova.

The production of twins and plural births was also considered. Here the ovaries must act at or about the same time when the sex of the twins is different, while when twins are of the same sex it was shown (see Tufnell's case) that the ovary of one side may provide two ova.

Unilateral sterility was shown to account for those cases where the children are all of the same sex, or where, after a child of one sex is born, the remainder are of the opposite sex.

The usual mixture of children as regards sex, which most parents have, is due to both ovaries usually being active and thus supplying children of each sex.

There are two ovaries, and two sexes only.

THE PRESIDENT remarked that discussion on sex problems had been popular from time immemorial, but, however interesting they might be, they seemed ever barren of useful results. Mr. Dawson had taken great pains to collect what must certainly be called clinical evidence, and had thus avoided

. *a priori* arguments founded on one or two cases of unilateral ovariectomy. Did he seriously believe that where a male heir was a matter of national importance the removal of a queen's left ovary would at least avoid disappointment?

DR. BLACKER was surprised to find Dr. Dawson claiming originality for a thing which dated back to 500 B.C. In view of the large number of observations collected by various observers, and the numerous experiments carried out upon animals, he found it impossible to believe that the male parent played no part in the determination of sex, and that the sex of the ovum was settled at the time of its expulsion from the ovary. Dr. Dawson's theory did not explain any of the known facts with regard to the relative proportion of the sexes. Even if they accepted it, it did not advance their knowledge as to the real cause of sex. He felt sure that many of the Fellows could instance cases of unilateral ovariectomy and subsequent pregnancy which were in direct opposition to Dr. Dawson's assumption. He could relate two such cases. If the time ever came when they would be able to explain the exact causation of sex, he felt sure that it would be found to be, not in one theory or in any one factor, but in a number of factors interacting under varying conditions. Any theory of sex put forward for acceptance must apply to the whole of the vertebrata. Birds had only one ovary. The common fowl had only one, the left ovary. Would Dr. Dawson kindly explain where, according to his view, cocks came from?

DR. HERBERT SPENCER said the paper was supported by what appeared at first sight to be an imposing array of facts, and contained some statements of opinion which are not facts. It was a pity that more inquiry had not been made as to the sex of the children born after unilateral ovariectomy. He had himself removed a left-sided ovarian tumor completely, and the patient had in a subsequent pregnancy borne twins of different sexes. There was no doubt whatever that the tumors had been completely removed. Cases of this kind absolutely disproved the theory of the author.

DR. DAWSON, in his reply, stated that pregnancy after the removal by operation of the tube of one side and of the ovary of the opposite side was to be explained by transperitoneal migration of the ovum. He did not consider that the male parent had anything to do with sex causation, nor did he consider it necessary to argue from causation of sex in the lower animals, but confined his arguments to the human species.

Cases where, for instance, male children were born years after the removal of a right ovary, might be explained by a small portion of the right ovary having been left behind, and he quoted two cases to show that this had not infrequently occurred. In one such case both ovaries had been removed, yet a male child was subsequently born on two occasions.

REVIEWS.

PHYSICAL DIAGNOSIS IN OBSTETRICS. A Guide in Antepartum, Partum, and Postpartum Examinations, for the Use of Physicians and Undergraduates. By EDWARD A. AYERS, M.D., Professor of Obstetrics in the New York Polyclinic; Attending Physician to the Mothers' and Babies' Hospital. Pp. 283, with 67 illustrations. New York: E. B. Treat & Company, 1901.

The title of this work is partially misleading, as it is not confined exclusively to the subject of physical diagnosis, but includes such subjects as are touched upon in clinical courses in obstetrics—history-taking, the conduct of labor and the puerperium, and care of the child. The writer opens his book by giving the obstetrical history chart which he employs. In explanation of an apparently exaggerated attention to details at the expense of what seems unnecessary labor, he states that a number of the pelvic measurements given are intended to be taken only when there is evidence of deformity, and that the value of abdominal measurements is chiefly to secure attention to slight variations and to train to accuracy in observation. The balance of the work is devoted to discussion of each of the headings and questions contained in the chart. In general this is done in a clear and practical manner, and the advice given is sound; but certain points will not be universally accepted without criticism. Among these is the method of controlling the delivery of the head through the vulva. The writer places the palm of the right hand upon the exposed portion of the head, the thumb and middle finger pressing the tissue at each side of the vulva toward the centre, while the middle finger of the left hand, protected by a special loose rubber shield, is inserted into the rectum and presses the head against the pubic arch. This is advised as allowing the use of the finger in the rectum while keeping it sterile for subsequent steps. The cut, however, shows the other fingers in a far from sterile region, behind the anus. No mention is made of the advisability of regulating the advance of the head by pressure upon the parietal eminences, though apparently the method employed actually does retard the head in this way. The treatment recommended for uterine hemorrhage seems hardly suitable in the hands of one not thoroughly trained in the principles and practice of asepsis. Beyond stimulation of the fundus by the hand upon the abdomen, and compression of the uterus bimanually by causing a sharp antelexion, the writer favors only tamponing the uterine cavity with gauze. The use of hot douches of simple boiled water or with acetic acid, etc., which would seem safer, in the hands of many, than

the insertion of gauze of doubtful sterility, is merely mentioned as inferior to packing the uterus. In describing ligation of the cord it is advised that it should be stripped toward the abdomen, "to avoid including a possible hernial protrusion of gut and its inclusion in the ligatured stump." It would certainly seem that careful inspection of the cord might prevent the occurrence of such a rare accident, and that the ordinary method of stripping the cord away from the abdomen, so as to remove the Whartonian jelly from the stump and thus secure its earlier desiccation, is more rational and generally useful.

H. D.

A TEXT BOOK OF PRACTICAL OBSTETRICS. By **EGBERT H. GRANDIN, M.D.**, Gynecologist to the Columbus Hospital, etc., and **GEORGE W. JARMAN, M.D.**, Gynecologist to the Cancer Hospital, etc. Third edition, revised and enlarged. With 52 full-page plates and 105 illustrations in the text. 8vo. Pp. 511. Philadelphia, New York, Chicago: F. A. Davis Company, 1900.

Having passed through two previous editions, this text book of obstetrics is presumably so well known to the general practitioners and students for whom it is written that a critical description seems unnecessary. This edition differs from the last chiefly in the addition of a concise chapter treating of the anatomy of the generative organs and of embryology. A glance at the familiar obstetrical groups (of five) shows that the writers still favor delivery of the head through the vulva by the aid of a finger in the rectum. It is difficult to understand the necessity for this apparently uncalled-for departure from the paths of aseptic technique, when, by the method employed at the Sloane Maternity Hospital, for example, this can be avoided. As is probably generally known, the method referred to is that of advancing the head by the middle finger of the right hand reaching behind the anus to press upon the forehead of the fetus, and separated from the anus by a sterile towel if desired, while the thumb and forefinger of the same hand, one over each parietal eminence, delay the sudden advance by pressure upon the greatest diameter emerging through the vulva, and by drawing the labia together diminish sudden tension upon the perineum. Three fingers of the left hand can delay the rapidly emerging head, while the thumb and little finger push the anterior commissure of the vulva over the occiput.

PHYSICAL DIAGNOSIS OF DISEASES OF THE CHEST. By **RICHARD C. CABOT, M.D.**, Physician to Out-Patients, Massachusetts General Hospital; Assistant in Clinical Medicine, Harvard Medical School. Pp. 310. With 142 illustrations. New York: William Wood & Company, 1900.

Dr. Cabot's work is one which is worthy of an extensive review. Justice may, however, be done it by the simple statement that it deserves unqualified commendation. While

not claiming originality, the writer has endeavored to eliminate the errors which have been transmitted from one author to another, and to include those subjects which frequently are slighted. He has succeeded in producing a book of convenient size without sacrificing the accuracy of larger works. Well-chosen illustrations add to the clearness of the text. It is marred only by a few errors, such as the unfortunate substitution of the word *pulmonic* for *aortic* in the caption of Fig. 78, by which the opposite idea from that intended is conveyed.

H. D.

UTERINE TUMORS: THEIR PATHOLOGY AND TREATMENT. By W. ROGER WILLIAMS, Fellow of the Royal College of Surgeons. 12mo. Pp. 360. New York: William Wood & Company, 1901.

No one is more widely known as an authority on the subject of cancer than the distinguished author of this little volume, and no one is better fitted than he to select from the enormous mass of tangled and disjointed facts which cumber the medical literature of the subject those which will represent clearly and briefly the sum of our knowledge. Not attempting any original investigation here, he has instead generalized and reduced to order. He first sketches the development and life history of the uterus, together with its histology in relation to its neoplastic pathogeny, then takes up the subject of myomata, which is treated with great thoroughness, and finishes with chapters on cancer and sarcomata. Discussing the vexed question of the pathogenesis of uterine myomata, he says, after speaking of epithelial inclusions in these growths: "Uterine myomata and cysts arise . . . from dislocated myomatous elements connected with abnormally evolving 'rests' of Wolffian and Müllerian structures, or even of the uterine mucosa itself. Thus their initial multiplicity may be accounted for, as well as the similitude of their structure to that of the uterine wall."

PRACTICAL MANUAL OF DISEASES OF WOMEN AND UTERINE THERAPEUTICS FOR STUDENTS AND PRACTITIONERS. By H. MACNAUGHTON-JONES, M.D., M.Ch., Master of Obstetrics (Honoris Causa), Royal University of Ireland; Fellow of the Royal College of Surgeons of Ireland and Edinburgh; President of the British Gynecological Society, etc. Eighth edition, revised and enlarged, with 640 illustrations and 28 full-page plates. Pp. 947. New York: William Wood & Company, 1900.

To have arrived at the classical honor of an eighth edition a medical work must possess qualities of such sterling worth and be so well known by the profession that little need be said of it. While preserving the essential characteristics of its predecessors, the author in the present edition has felt it necessary to rearrange, and in greater part to rewrite, the volume, so that it appears in a greatly changed form. Obsolete views,

practices, and applications that we have found reason to criticize in former editions, have been omitted, and the work as it now stands is a compendium of nearly everything of practical importance in gynecology which has received the seal of professional approval up to the date of its publication. The illustrations are a prominent feature, are well selected, and they, as well as the authorities quoted, give the work a cosmopolitan character.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia, etc.; assisted by H. R. M. LANDIS, M.D., Assistant Physician to the Out-Patient Medical Department of the Jefferson Medical College Hospital. Vol. I., March, 1901. Surgery of the Head, Neck, and Chest; Infectious Diseases, including Acute Rheumatism, Croupous Pneumonia, and Influenza; Diseases of Children; Pathology; Laryngology and Rhinology; Otology. Pp. 440. Philadelphia and New York: Lee Brothers & Co., 1901.

Of particular interest to the readers of this JOURNAL is the section on Diseases of Children, by Dr. Floyd M. Crandall. Though not showing marked advances during the last year in this branch of medicine, it includes abstracts of the discussion of many subjects and a number of reports of the rarer cases. The other writers of this volume of *Progressive Medicine* are J. C. Da Costa, Frederick A. Packard, Ludwig Hektoen, A. L. Turner, and Robert L. Randolph. The subjects which they discuss are not connected with obstetrics, gynecology, or pediatrics. The sections on Infectious Diseases and Pathology are worthy of attention.

OBSTETRIC AND GYNECOLOGIC NURSING. By EDWARD P. DAVIS, A.M., M.D., Professor of Obstetrics in the Jefferson Medical College, Philadelphia, and in the Philadelphia Polyclinic; Obstetrician to the Jefferson and Polyclinic Hospitals; Obstetrician and Gynecologist to the Philadelphia Hospital. Illustrated. 12mo. Pp. 402. Philadelphia and London: W. B. Saunders & Co., 1901.

In this carefully written volume are given the details of the art of nursing in obstetric and gynecological cases. Especial attention is paid to asepsis and antisepsis. The book is very complete, most satisfactory in its teaching, and can be read with much profit by the physician as well as the nurse.

AMERICAN YEAR BOOK OF MEDICINE AND SURGERY. Edited by GEORGE M. GOULD, M.D. Illustrated. Pp. 610. Philadelphia and London: W. B. Saunders & Co., 1901.

This is a yearly digest of medicine and surgery drawn from the leading journals, monographs, and text books. It is issued in two volumes, *Medicine* and *Surgery*. In the volume on

surgery, general surgery is treated by Keen and Da Costa, of Philadelphia; obstetrics by Hirst and Dorland, of Philadelphia; gynecology by Baldy and Dorland, of the same city; orthopedic surgery by Gibney and Waterman, of New York; ophthalmology by Hansel and Reber, of Philadelphia; otology by Barnett, of Philadelphia; nose and throat by Ingalls and Ohls, of Chicago; and anatomy by Hamann, of Cleveland. The material is carefully selected, and the make-up of the book is good.

A TEXT BOOK OF THE DISEASES OF WOMEN. By HENRY J. GARRIGUES, A.M., M.D., Gynecologist to St. Mark's Hospital, etc., etc. Third edition. 367 Illustrations. Pp. 756. Philadelphia: W. B. Saunders & Co., 1900.

This volume has essentially the same encyclopedic characteristics that have made its two predecessors so successful. It bears the marks of careful revision; certain matter that seemed of minor importance in a text book has been omitted, while much new material has been incorporated. The author's aim has been from the first to write a practical work and one especially suited to the requirements of the country practitioner in general practice. To this end he has omitted reference to historical development, reports of special cases, and descriptions of *every* method of treating any particular condition, and in place of these has gone into minute details ordinarily omitted from text books.*

VADMECUM FÜR HISTOPATHOLOGISCHE UNTERSUCHUNGEN IN DER GYNÄKOLOGIE. Von DR. E. G. ORTHMANN. S. 174. Mit 73 Abbildungen. Berlin: Verlag von S. Karger, 1901.

The prominence given to microscopical diagnosis in gynecological practice has recently resulted in the publication of several extremely useful books on the subject. Among these the recent handbook by Dr. Orthmann ranks among the best of the smaller manuals. With no attempt at comprehensiveness, he has briefly summarized the more important fundamental features of the type lesions of processes ordinarily encountered; and the terse descriptions have fortunately been reinforced by many valuable drawings. For the beginner and general practitioner this book will be found well up to date.

A MEDICO-LEGAL MANUAL. By WILLIAM W. KEYSOR, Lecturer on Medical Jurisprudence in the Omaha Medical College, and Judge of the District Court, Omaha, Nebraska. 8vo. Pp. 316. Omaha: Burkley Printing Company, 1901.

Most works on medical jurisprudence are written seemingly for lawyers rather than the physician. This small volume presents and emphasizes the legal side of medical jurisprudence, and furnishes much useful information of importance to the medical practitioner, familiarizing him with those legal terms and principles which he ought to know and comprehend, both in order to acquit himself creditably as an expert witness and for his own protection in case of negligence or malpractice suits or in relation to contracts for his own professional services.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Fibroid Tumors complicating Pregnancy.—J. E. Gemmell¹ describes two cases of pregnancy complicated by fibroid. One case went on to term without any trouble being caused by the tumor. She had puerperal eclampsia. The labor was protracted and terminated by means of forceps. Three days after labor the patient developed symptoms of sapremia. On the sixth day the patient developed septic peritonitis, and two days later was operated upon and the uterus removed. Patient recovered slowly. The other patient had multiple fibroids simulating retroversion. The patient was operated upon and the fibroids enucleated. The pregnancy went on to term.

Gonorrheal Infection of the Uterus causing Abortion.—D. Draghiescu and L. Sion-Moschuna¹ contribute to the history of the gonococcus an account of a woman 18 years old who had had a healthy child and normal puerperium and showed no signs of syphilis. With no history of traumatism or exertion, she aborted at two months. There were then signs of an acute gonorrhea. After repeated careful bacteriological examinations of the genital tract, the writers conclude that the gonorrheal process invaded the uterus, attacked the ovum, lowering its vitality, and so led to the abortion.

Rectification of Position by Forceps.—O. Schaeffer¹ opposes the use of forceps for unfavorable face and brow presentations in cases in which there is no abnormality of the maternal passages, because not only may local stretching and crushing of the fetal parts occur, but severe and protracted reflex nervous phenomena may result.

Hemorrhage from Umbilical Cord.—J. Balin¹ reports a case of hemorrhage from the umbilical cord which resulted in the death of the child within a few hours after birth, although the cord had been ligated immediately after delivery. After excluding syphilis, he concludes that the hemorrhage was due to careless ligation of the cord. The case is recorded as furnishing proof of the necessity of doing this with care, in opposition to the opinion of those who report large numbers of cases in which, although the cord has not been tied, the contraction of the muscle fibres in the walls of the umbilical vessels has sufficed to arrest bleeding.

Retroversion of the Gravid Uterus.—Mouchet¹ describes two cases of retroversion of the gravid uterus with complete incarceration. The first was seen at three and a half months, when there was complete retention of urine and great pelvic pain. After laparotomy it was reduced and pregnancy

continued to a normal labor at term. The second came under observation at four months. It was complicated by an ovarian cyst and gave severe symptoms—complete retention of urine, severe pain, vomiting, and fever. The cyst was removed and the uterus replaced through an abdominal incision, and pregnancy terminated normally.

Pinard,¹ in discussing this report, lays down the following rules for the treatment of retroversion of the pregnant uterus: Empty the bladder and rectum. Spontaneous reduction usually occurs. If the condition persists, manual replacement through the vagina, with an anesthetic if necessary. If this fails, introduction of a bag into the rectum; this is inflated and left in place. No other instruments should be used. Failing, laparotomy and direct reduction is the only rational procedure. This permits destruction of adhesions and removal of tumors if they are present.

Phlegmasia Alba Dolens.—A. Herzfeld,² after a thorough trial of the ordinary therapeutic measures used to combat phlegmasia alba dolens, used unguentum Credé with excellent results. He rubbed into the lower extremity 15 grammes daily until 180 grammes were used. After the second application the temperature fell below normal and it was necessary to use active stimulation. The pain, fever, and swelling rapidly subsided. He calls attention to the large dosage used, which he considers necessary for an effective result.

Treatment of Phlegmasia Alba Dolens by Opothrapy.—G. Keim³ reviews the literature, which shows that under the influence of certain substances, especially peptone, introduced into the blood, the liver acquires the function of producing a material which diminishes the coagulability of the blood. This is doubtless a function, in a less marked degree, of the normal liver when albuminoids are present in the blood. During pregnancy the liver undergoes certain changes, as is proved histologically, and also clinically by urinary alterations and the occurrence of hepato-toxemia. At the same time the blood contains an increased amount of fibrin. The writer has attempted to combat the resulting tendency to coagulation of the blood by treating cases of phlegmasia alba dolens by means of enemata of peptone and fresh calf's liver; 100 grammes of fresh calf's liver, chopped finely and mixed with 5 or 10 grammes of pure peptone and 250 grammes of water, formed an emulsion which was injected in two parts with an interval of half an hour. This was preceded by an enema to empty the rectum. In his first case symptoms of uterine infection three days after delivery, relieved by curettage, were followed on the eighteenth day by objective signs of phlegmasia alba dolens. The above treatment was instituted two days later. Temperature rapidly fell to normal by the third day; pain disappeared in eight days. In the other case, in which temperature and other symptoms appeared on the eighteenth day, treatment was begun two days later. In eight days local signs had greatly improved and the temperature was normal.

Influence of Pregnancy and Labor upon Diseases of the Ear.—A. Bayce* concludes a thesis by stating that during pregnancy and after labor the periods of congestion, which occur so frequently, lead to a subacute attack in cases of old or recent catarrhal affections of the ear, followed by a reparative sclerosis. They may also cause primary sclerotic changes. Eventually the result of parturition is, in either case, to cause sclerosis.

Obstetrical Analgesia by Subarachnoid Injection of Cocaine.—Dolérís and Malartie* publish the results of 25 cases in which they have employed this procedure. They usually administered 1 centigramme, occasionally 2. The usual time for the injection was when the os was dilated to the size of a five-franc piece or that of a small palm of the hand. Analgesia was established in about five minutes and lasted about one and a half hours. As the pain disappeared the uterine contractions became stronger and more frequent, so that labor was frequently shortened. The placenta followed soon, and little hemorrhage occurred. In 2 cases the injection was repeated, prolonging the anesthesia without any injurious effect. Headache during the first twenty-four hours, a symptom which has been reported, was observed in 8 of the cases, and yielded readily to antipyrin. In only 1 case was there elevation of temperature. Vomiting nearly always occurred about five minutes after the puncture, lasted two to ten minutes, accompanied by congestion and sweating of the face, and in about ten minutes from the beginning of vomiting all these symptoms had disappeared. The fetus suffered no ill effects.

Hydatidiform Mole.—G. Eustache* has observed 4 cases of this class, 2 of which he reports in detail. After discussing their pathology, symptomatology, and diagnosis, he considers their prognosis and treatment. Unlike many others, he does not regard their transformation into deciduoma malignum as an occurrence of great frequency. In none of his own cases did this take place. Holding this view, he does not advocate radical treatment, and thinks that hysterectomy is too thoughtlessly performed. Neither does he favor even immediate emptying of the uterus. From his standpoint, symptomatic treatment, particularly in regard to hemorrhage, with expression of any portion of the mole which may remain when spontaneous expulsion occurs, followed by a hot intrauterine douche, is all that is required. The patient should then be kept under observation for weeks, or even years, and if symptoms of deciduoma malignum appear hysterectomy should be performed at an early moment.

Placenta Previa.—Camille Fournier* adds to 4 cases which he has previously reported 3 others of placenta previa with hemorrhage, treated by accouchement forcé. As a result he reports 7 mothers and 4 children saved. He considers this the only logical method of arresting hemorrhage, and advocates manual dilatation in preference to instrumental whenever possible. After dilatation of the cervix podalic version

should be followed by extraction of the placenta and membranes, and this by an antiseptic intrauterine douche.

Atresia.—P. G. Edgar^{*} reports a case of agglutination of the margins of the os externus during parturition. The margins of the os were so firmly adherent that labor could not progress until the adhesions had been destroyed manually. The woman had been in labor three days before Edgar was called in. The patient was a Chinese woman.

Treatment of Threatened Puerperal Eclampsia.—Charles M. Green^{*} has found heat, wet and dry, applied to the body, to be of marked value. Hot-air baths are most appropriate in the treatment of actual eclampsia, chiefly because the patient is often comatose or unable to help herself. The wet pack is often successful, but the hot-water immersion bath more satisfactorily meets the indications. Not only does it produce profuse diaphoresis and reduce tension, but it acts as a marked sedative to the nervous system. The water should be as hot as can be borne, and the patient should remain therein until profuse perspiration of the face shows the sweat glands are in full action. If the heart's action is at all weak, it is wise to administer brandy. When free perspiration has been induced, the patient should be rolled in a blanket, placed in a warm bed, and covered with several blankets. The hot bath is a powerful agent in producing labor. He reports three cases successfully treated by the application of heat to the body.

Nephrorrhaphy.—Charles P. Noble¹² recommends careful discrimination in diagnosis, in order to separate cases in which movable kidney is a coincidence in a case of neurosis from those in which it is the cause of local and reflex symptoms. Resort to the rest cure for cases of slightly movable kidney, especially in young women. The employment of a symptomatic treatment in cases in which the relation between the movable kidney and the nervous symptoms present is uncertain. Nephrorrhaphy should be employed in these cases only after non-operative measures have failed to afford relief. He also recommends the immediate resort to operation in those cases in which local symptoms, such as pain, sense of weight, or symptoms of strangulation, are present, and when the examination of the urine shows indications of congestion of the kidney, such as the presence of hyaline casts or albumin.

Puerperal Eclampsia.—G. E. Fitzgerald¹² suggests that to induce labor, however severe the fits, is a great mistake. He reports two cases upon whom premature labor was induced, and both cases died. Against the induction of labor he cites two cases treated by morphine with excellent results. The fits were checked by the morphine, and did not return so long as the patients were under its influence.

GYNECOLOGY AND ABDOMINAL SURGERY.

Hemostasis in Abdominal Surgery.—E. E. Montgomery¹² appreciates the angiotribe as a useful instrument, but would not trust it without being supplemented by the ligature. He

has found that catgut remains long enough to insure the patient against hemorrhage.

Treatment of Adherent Cysts.—J. E. Allaben " reports a case of cyst where the adhesions were so dense that the cyst could not be enucleated. The cyst was drawn out of the abdomen and stitched to the peritoneum around the abdominal incision. A rubber drainage tube was passed through the bottom of the cyst and out of the vagina; then the abdominal wound was closed to within two inches of its lower angle, and a few strips of gauze passed to the bottom of the cyst. The cyst walls collapsed and granulated. The patient was entirely cured at the end of eight weeks.

Ovarian Grafting.—R. T. Morris, " from the experiments of others and those carried on by himself, believes he is justified in stating that a properly transplanted ovary may continue to perform its full normal function, and that we may expect to prevent the symptoms of the menopause after a patient's ovaries have been removed. In a certain percentage of cases we may reasonably expect pregnancy. The special dangers to be anticipated from ovarian grafting would seem to be no more than the dangers from simple uncomplicated laparotomy. Dr. Morris reports six cases in which he got good results from ovarian grafts. One case became pregnant shortly after the operation, but aborted at the third month.

Vaginal versus Abdominal Hysterectomy for Cancer of the Uterus.—H. J. Boldt " states that, with his present views, the only cases in which the abdominal operation is indicated are those in which the uterus is too large or too adherent from inflammatory processes to be removed per vaginam without morcellation, and those in which the diagnosis of glandular enlargement is made.

Treatment of Inflammatory Diseases of the Uterus by Irrigation.—F. W. Talley " treats both acute and chronic inflammatory diseases of the uterus by means of hot alkaline douches. The solution used is water to which is added bicarbonate of soda, one drachm to the quart. The temperature should be about 110° F. and should be gradually increased to 123° F. Each douche should be continued until the parts become blanched. The treatment by irrigation is carried out at intervals of seventy-two hours.

Treatment of Vaginal Discharges by Saccharomyces.—H. Fleischmann " has employed in 79 cases the treatment of vaginal discharges by introduction into the previously cleaned vagina of 10 to 20 cubic centimetres of a pure culture of saccharomyces and tamponing with wool for ten hours. The action upon other bacteria is supposed to be (1) mechanical, by rapid increase of the saccharomyces, (2) by absorption of water and their sources of nourishment, (3) by their products. Fleischmann noted no bad results in any case. In non-gonorrheal cases the thick, tenacious secretion became rapidly thinner and more transparent. In cases of gonorrhea the swelling, redness, painfulness, and tenderness of the vaginal mucosa and erosions disappeared.

Carcinoma of Cervix with Hematometra and Hematosalpinx.—Lauwers " operated upon a case of carcinoma of the cervix in which the fundus of the uterus, which was hard, spherical, and movable, reached nearly to the umbilicus. The patient was 72 years old and had ceased to menstruate at the age of 47. By complete abdominal hysterectomy Lauwers removed what proved to be a uterus whose cervical canal was obstructed by the cancerous growth, which had invaded the body of the uterus. The size of the uterine tumor was due to the distension of the cavity with altered blood, presumably from hemorrhages from the neoplasm; and the left tube, narrow at its uterine extremity, was distended distally with a chocolate-colored, syrupy fluid.

Inflammation of Female Genitalia after Marriage.—F. P. Guiard " divides these into those due to gonorrheal infection and those from other causes. The latter, he holds, are due to saprophytic bacteria resident in the vagina, which become active after the mechanical irritation and local congestion of sexual intercourse. As prophylactic treatment he urges the use of antiseptic vaginal douches for some time before marriage. These douches are advised after coitus in cases where the husband is supposed to have vestiges of chronic non-gonorrheal urethritis.

The Treatment of Uterine Hemorrhage.—Ostermann " reports 30 cases of uterine hemorrhage successfully treated with a mixture of antipyrin and salol, as recommended by Labadie-Lagrave. Equal parts of these drugs are mixed in a test tube and heated till they form a brownish, sticky fluid. While still warm the fluid is applied to the interior of the uterus, the cavity of which having been previously cleansed and dried with a cotton applicator. Even in cases of obstinate menorrhagia and metrorrhagia one application sufficed to stop the bleeding.

Formalin in Metrorrhagia.—Gerstenberg " discusses the value of intrauterine applications of formol, as advocated by Menge, and reports 11 cases in which good results were obtained. The undiluted formalin (40 per cent formaldehyde solution) is applied to the interior of the uterus with a Playfair applicator, which is rapidly withdrawn after touching every portion of the uterine mucous membrane. The disinfected vagina is filled with cotton tampons, which are removed after twenty-four hours. Gerstenberg uses this treatment in his office, but insists that the patients after reaching home remain in bed for at least two days. The cases treated comprised climacteric bleeding, menorrhagia, endometritis, subinvolutio post partum, etc. The results were always most favorable, and subsequent stenosis was never observed.

Electrical Treatment of Uterine Fibroids.—E. Doumer " defends the use of continuous electrical currents of moderate intensity, not exceeding 50 milamperes, in the treatment of uterine fibroids. He opposes the dictum that operation is indicated in all cases, as he does not believe removal necessary when there is no bleeding, pain, or rapid or marked develop-

ment. He has found currents of moderate intensity superior to those of high for arresting hemorrhage, and quite as constant in the relief of pain. Diminution in size he believes occurs quite as often with these as with currents of high intensity, being uncertain in both cases. He particularly recommends, however, the use of intrauterine or intracervical faradization, which he characterizes as efficacious and absolutely harmless. For the arrest of hemorrhage he considers it the method of choice, arresting hemorrhage in a few hours and reducing menorrhagia to normal menstruation within a few months. He advises currents of feeble intensity and tension, interrupting the current three to ten times a second. The negative pole is placed in the uterine cavity or cervical canal; the positive, on the abdomen or elsewhere. The duration of a treatment is about three minutes, repeated two or three times in a day to stop hemorrhage, two or three times weekly for menorrhagia.

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DISEASES OF CHILDREN.

Ambidexterity.—In pleading for its general adoption, E. Noble Smith¹ says that a great deal might be said as to its advantages, but wishes to draw attention to some of the disadvantages of the preponderating use of the right side of the body, especially the right arm. As the nerves that supply the right side of the body emanate from the left side of the brain, and *vice versa*, it follows that the excessive use of the right side of this nerve centre is left undeveloped, while the left side of the brain is overworked. It has been shown that children who are taught to use the left hand equally with the right become more facile with the right itself, or, in other words, the use of the left hand improves the action of the right to a greater degree than seems to occur when the right alone is used. This is markedly the case in drawing and writing. Moreover, these children are said to become relatively sharper and more intelligent than others. The author has given much attention to the production of deformity from the excessive one-sided use of the body. There are doubtless many causes of lateral curvature of the spine, but it is generally admitted that unevenness of posture has a great influence in this respect, and the preponderating use of the right side necessarily bears upon the spine unequally. It is a further remarkable fact that a large majority of these curvatures consist in a

bending of the upper part of the spine to the right, exactly in the direction produced by the excessive use of the right arm. The following are some of the exciting influences of curvature of the spine: Standing on one leg (the right leg being usually selected); postures in drawing and writing and other occupations; the use of various musical instruments, especially the violin; sitting for various purposes in limp postures without proper rest for the back, when the customary preponderating use of the right arm tends to make the individual rest with that arm protruded more forward than the left.

Analysis of Five Hundred Cases of Lateral Curvature of the Spine, and Treatment.—Chisholm Williams' reports only cases in which there was distinct lateral curvature. In 18 cases, although the spinous processes were perfectly straight, there was evidence of rotation in the dorsal and lumbar regions. Cases of single weak back were not included. Among the hospital cases there were four females to one male, in private practice seven to one, the difference probably being due to the fact that females in the latter class do not have as much freedom of action as their sisters in a lower grade of life. The greatest number of cases occur between the ages of 16 and 20. As to cause, there was heredity in 121 cases; rickets, 92; general weakness, associated with, as a rule, rapid growth or following specific fevers, 81; bad postural habits in youth, 111; occupations in adult life, 63; rheumatoid arthritis, 18; inequality in length of legs, 123; flat-foot, 131; knock-knee, 46; infantile paralysis, 32; chest diseases, 13; old empyema, 4; defective sight, 13; adenoids, 23; torticollis, 1; one arm only, 1; amesial pelvis, 23, out of 113 tested. The most common form was right dorsal convex and left lumbar convex, there being 257 out of the 500; 90 had right total convex curves; 84 had left dorsal convex and right lumbar convex curves; 64 had left total convex; 5 had triple curve, right upper, left middle, and right lower convex curves. As to treatment, with the exception of cases affected with short leg or flat-foot, or some easily remedied cause, no five were treated alike from start to finish. The author had no case under 25 years in which he was not able to effect some amelioration, by which he means not only a stronger back, but a more straight line of the vertebral column. Believing that direct general muscular exercises *alone* do positive harm to the great majority of cases, treatment was directed to: 1. The patient's general condition, improved by means of fresh air, fresh food, fresh clothing made to allow of chest development. Medicinally by means of the hypophosphites, cod-liver oil, bland preparations of iron, etc. 2. Getting the spinal column straighter by means of manual pressure, mechanical pressure, Barwell's rachylisis, Barwell's lateral sling, and Volkmann's sloping seat; weight pressure. 3. Keeping up the improved position by means of the apparatus prescribed at the City Orthopedic Hospital and devised by the late E. T. Chance. It is an adaptable metal splint and acts chiefly as a spinal extension. (The author describes the

apparatus and the method of using it.) Under the age of 5 years a leather or gutta-percha splint, suitably padded, is sufficient to overcome the curves. 4. Special exercises were ordered for each weak muscle or group of muscles until the spine was straight; then general muscular exercises were given to assist in keeping it in position. 5. Other aids were massage, galvanism, and rubber exercisers. The ease with which any case of lateral curvature of spine is treated depends on the following: 1. Intelligence and willingness on the part of the patient. 2. The care and help of parents or friends. 3. The assistance of the surgeon.

Athrepsia in a Newly Born Infant.—L. Baumel and E. Scheydt¹ report a case which presents a number of interesting points: 1. The considerable weight which a newly born child may lose (680 grammes) and yet live. 2. The long duration of the athrepsia: four months altogether in this case. 3. The possibility of the child's doubling and even tripling the usual weight at a given period—that is to say, of its gaining in grammes not only the amount suitable to its age, but an amount sufficient to make up, as it were, for lost time. 4. Finally, the possibility of a cure in the case of athreptic encephalopathy, which is against the opinion of Parrot himself.

Care of Children with Mitral Lesions.—George Montague Swift² holds that practically we can always assume the cause of endocarditis to be the rheumatic poison. The rheumatic poison and the endocarditis cause anemia and faulty nutrition throughout the system, which interfere with the development of a compensating hypertrophy of the heart muscle; or if the compensatory hypertrophy has been achieved, the anemia causes a subsequent degeneration or dilatation. The two great indications for treatment are to overcome the cause and to increase nutrition. If there are indications that the heart is not doing its work properly, if the rheumatic poison is active, or if the nervous system is irritable, it is best to put the child to bed and to keep it there until all such conditions are past. A stay in bed serves to protect the child from making undue effort while there is an active change going on in the endocardium or cardiac muscle, and to rest it physically and nervously; it also serves to cause those about the child to regard it as not well, and so not to demand too much of it. The prolonged quiet enables the heart muscle to regain its tone and enables the nervous system to become more stable. It will be well to use salicylates—salicin and strontium salicylate are the least irritating to the stomach. Dr. Solis Cohen's formula is very useful:

R Sodii salicylatis.....	ss.
Tincturæ ferri chloridi. . .	ss.
Acidi citrici.....	gr. x.
Glycerini.....	℥ iiss.
Olei gaultheriæ.....	gtt. viij.
Liquoris ammonii citratis . . .	ad ℥ iv.

Dissolve the sodium salicylate and the citric acid in the liquor ammonii citratis. To the glycerin add tinctura ferri chloridi. Mix the two solutions. Then add oil of gaultheria.

In the belief that in some cases the original poisoning may have occurred through the gums or throat, decayed teeth should be filled and roots extracted, chronically inflamed tonsils and adenoid growths removed, the mouth and throat being put in as clean and healthy a condition as possible. To improve nutrition the children are fed as generously as possible, and the appetite is stimulated by tonics and restoratives. Meat is an important element in the diet. As to exercise, when the exciting cause of the trouble has disappeared and the heart muscle is properly nourished, increase of freedom should be allowed, especially out of doors, some one being on the watch to prevent or stop excessive strain or exercise. Overdoing causes a pallor which is a danger signal and indicates further rest in bed. If the child gains in color and flesh, gets tired less easily, is interested and eager for its play, and sleeps well, we have the best assurance that matters are going well.

Causes and Treatment of Urgent and Serious Conditions in the New-born.—Samuel Wolfe ' says that if we leave out of consideration malformations and monstrosities, the causes for such conditions may be divided into: (1) premature birth, (2) plural births, (3) pressure on the umbilical cord, (4) pressure on the head, (5) pressure on the thorax, (6) toxic conditions of the fetal blood incident to emotional and somatic states incited in the mother during parturition, (7) essential conditions of the fetus. At the moment of birth the accoucheur, instead of finding a healthy, well-developed infant, may have one of two other things—a blue, bloated, breathless baby, or a pale, withered, relaxed, nerveless, pitiable, and apparently lifeless creature. In the first instance, a slap on the buttocks, a sweep of the finger over the fauces, or a touch to the glottis will often be rewarded by a good loud cry, and, the normal color soon appearing, all is well. Occasionally one may have to give the child a dash of cold water on the face, chest, or back, and to roll it a moment or two on the bed, before getting so good a result. In the second instance, however, the case is more serious. With the cord uncut, the practitioner must attempt to start respiration by reflex excitement. Failing in this, he must try the Sylvester method, changing later to the Marshall Hall method. He may make traction on the tongue, dilate the sphincter ani, resort to mouth-to-mouth inflation, or dip the child alternately into hot and cold water. Finally, he may cut the cord and allow a few teaspoonfuls of blood to flow from it, after which he may again try artificial respiration, possibly by the Byrd or Schultze method. He should not jump indiscriminately and rapidly from one method to another. While a long siege may bring a number of them into play, any one chosen should be patiently and fully practised for some time. If respiration and circulation are finally established, the baby is probably weak, premature, and immature. The writer, before cutting the cord, usually has the child laid on a clean napkin, sufficiently removed from the mother to avoid being soiled by dis-

charges, without causing tension on the cord. Clean lard is rapidly rubbed over its whole body and rubbed off with a soft clean cloth. When the cord is cut a clean child is handed to the nurse. A layer of absorbent cotton long enough to reach from the armpits to the buttocks is laid down, and on this, at right angles, are laid four narrower layers, two above and two below. When the baby is put on this prepared bed, the two narrow layers are first brought forward over the scapular regions, so that their front ends rest on the chest, when the large layer is brought round the body and lightly run over with a narrow bandage or fastened by tapes, but not tightly. The legs and feet are then separately wrapped in the lower projecting layers, which are secured by a bandage. Lastly, the arms are separately enveloped. By pulling away soiled tufts of cotton and replacing by others, the toilet of the infant can be easily and expeditiously made. Artificial heat must be furnished by hot bottles or hot-water bags. If an incubator is preferred, one can be made with help from the text books. Feeding must be carefully managed, and the milk may have to be drawn from the breast and given with a dropper or spoon. If, in spite of all care, the infant remains feeble, breathing with a moan or sigh, not crying at all, and having an almost imperceptible pulse with ashen-gray or dusky skin and lips, stimulation will have to be resorted to. The author emphasizes the fact that he has obtained excellent results from the administration of atropia or nitroglycerin. The ordinary hypodermatic tablets which every one carries in his cases can be used for preparing the medicine in such a way that each teaspoonful of the atropia solution contains from one-three-thousandths to one-two-thousandths of a grain, while the trinitrin solution should contain a similar fraction of a drop of the ten per cent solution. A dose of each or of one or the other may be given and its effects watched. Ordinarily it is repeated from two to six times in the twenty-four hours. Improvement in the complexion, the pulse, and the respiration can often be noted within an hour of the first dose, and can be maintained by judicious repetition till the powers of Nature rally.

Convulsions in Children.—William N. Bullard* thus sums up the result of a study of the cases brought for treatment to the Boston Children's Hospital from 1883 to 1894: (1) One per cent of the children came for convulsions; (2) 10 per cent of children between 5 and 12 years of age gave a history of convulsions; (3) cases that appear to be due to some manifest reflex cause may turn out to be true epilepsy; (4) other cases, where the attacks occur frequently and without apparent cause, may suddenly recover, at least for a considerable period; (5) children who have had convulsions may be strong and free from nervous tendencies in later life, although the proportion who have nervous tendencies seem to be greater than in those who have not had convulsions.

Diabetes Mellitus in a Child of Six Months.—L. Baumesl* reports a case. He agrees with Lancereaux that the affection

may be due to arrested development of the pancreas. Or the pancreas may be well developed at first, and later undergo atrophy, from gastro-enteritis, peritonitis, etc., or perhaps even from the irritating effect of teething upon the medulla oblongata, the pons, or even the brain through the medium of the trigeminal nerve. The author considers the condition curable. To promote the functioning power of the pancreas, alkalies can be administered to advantage. The development of the teeth can be assisted by the use of phosphates of lime. The thrush that usually accompanies teething should be treated by swabbing with a mixture of equal parts of sodium borate and "huile rosat," and by the administration every three hours of two teaspoonfuls of the following lotion: lime water, lettuce water, of each 60 grammes; simple syrup, 30 grammes; tincture of musk, 4 drops. Vichy water should not be given, as the free carbonic acid which it contains might easily increase or cause dilatation of the stomach. Pancreatin may be given in obstinate cases, and is perhaps best given in hypodermatic injections, as it is a substance which the stomach digests.

Diseases of the Ear in Relation to General Medicine.—Nathan G. Ward writes of the diseases which are apt to cause affections of the ear, as well as of the systemic results from diseases of the ear. *Mumps* have been known to cause sudden deafness, unilateral and usually permanent, probably due to a sudden extravasation of serum into the labyrinthic structures. In *measles* the ears are affected, not always producing suppuration, but causing hyperemia and congestion of the tympanum. The Eustachian tube is still more frequently involved. *Diphtheria* and *scarlet fever* more frequently produce suppuration of the middle ear than other diseases. Sudden deafness may be caused by congestion and exudation in the mucous membrane and collection of fluid in the tympanic cavity, preventing the transmission of sound-waves. Ulceration and necrosis of bone frequently follow, even to the extent of entire destruction of the Eustachian canal, both cartilaginous and bony, the ossicles and cochlea. In 25 successive autopsies of individuals who had died from diphtheria, 24 showed involvement of the middle ear. *Influenza* causes otalgia, which may be due to inflammation and swelling of the tissue and glands of the faucial region, or there may be serious involvement of the tympanum. Obstruction of the nose, on account of the intimate anastomosis between the blood vessels and lymphatics of the nose, naso-pharynx, and ear, will cause congestion of the Eustachian tube and middle ear by interfering with the return blood. *Lungs*—Croupous and catarrhal pneumonia and catarrhal bronchitis make chronic otitis media worse. The ear is frequently painfully involved in inflammatory troubles in the region of the tonsils, in diseases of the alveolar process or teeth, in gastro-intestinal affections, typhoid fever, tuberculosis, syphilis, and rheumatism. Lesions of the meninges and cerebrum may affect the ear. Mental excitement and worry increase deafness.

In diseases of the circulatory system and blood, kidney affections, diseases of the genital organs, and in eye troubles, the ear is often involved. Overdoses of certain drugs, such as quinine and the salicylates, produce tinnitus from congestion within the ear. As for *systemic results* from diseases of the ear, the more frequent are those from extension by contiguity of tissue, *e.g.*, meningitis, thrombosis in the venous channels, abscess beneath the dura, in the cerebrum or cerebellum; pyemia, facial paralysis, and involvement of the mastoid cells. The latter is the most frequent, and it is from this source especially that the other complications arise. The mastoid cells in children lie more nearly horizontal than in the adult, hence drainage is less perfect. This accounts in part for the more frequent involvement of the mastoid in children. Epilepsy has occurred from ear disease, and was relieved by proper treatment to the ear. In many of the diseases enumerated the ear trouble is not due directly to the systemic malady, but the latter weakens the resistance to the organisms, and the patient takes cold, which the more easily extends to the ear and produces much greater damage than is general in ordinary colds. In records of autopsies revealing these ear involvements there are no histories depicting the condition of the ear as revealed by careful examination before death. This is partly due to want of symptoms of that organ, but at the same time suggests manifestations that are interpreted as pointing to other organs that would indicate ear involvement if rightly understood. The general practitioner and the specialist should more often work together, studying diligently for all symptoms of ear development, and at autopsies dissecting the temporal bone and comparing the conditions found with the symptoms before death. By so doing great advances in diagnosis will be made.

Epilepsy.—E. Perier' prescribes the following treatment for this affection: 1. Long-continued administration (a year or more) of polybromides.

R Bromide of potassium..	}	ãã 10 grammes
" " sodium.....		
" " ammonium)		
Syrup of bitter orange peel.....		800 grammes

A teaspoonful at the midday meal for a week. Then twice a day during the second week.

Three times a day during the third week.

Twice a day during the fourth week.

Once a day during the fifth week. And *da capo*, continuing the ascending and descending scale throughout the year.

2. For fifteen days, one to three drops of Fowler's solution in a little water, at the midday meal; and for fifteen days, four to five drops of tartarized tinct. of iron, or some other similar ferruginous preparation.

3. A cold bath every morning, led up to gradually in those unaccustomed to its use.

4. Every three months a series of cold douches, five to ten

seconds in duration, on every part of the body except the head.

5. No wine, no stimulants, only milk or much-diluted malt extract. Simple and nourishing food. All fatiguing brain work should be stopped, and the child should, if possible, live in the country.

Genesis of Spina Bifida.—Etienne Rabaud^{*} thus concludes a detailed study of the subject: 1. Spina bifida results from an interesting modification of the medullary nervous system. The spinal fissure, properly so called, is a consequence of this initial process. 2. There are two types of spina bifida. The first is compatible with life, and is characterized by the existence of a more or less voluminous pouch. The second accompanies anencephalus, and is characterized by complete amyelia and by a spinal fissure open to the free air. 3. The first type, the only one of interest to the surgeon, includes both internal and external hydrorrhachis. In either case the spinal cord is completely enclosed by a neuro-epithelial or neural membrane. This closure occurs rather late in the course of embryonal development by means of the union of lateral ectodermal folds. The number of nerve cells entering into the formation of the dorsal wall of the spinal cord is very variable. This wall is covered by connective tissue in some form and by the skin. 4. The cavity of the pouch is therefore merely an *objective* dilatation of the canal of the ependyma, with which it is in direct communication. 5. The aspect of spina bifida may be modified by the intervention of pathological processes. Degeneration of the nerve tissue, for instance, causes opening of the pouch and its communication with the submeningeal spaces. 6. The cause of spina bifida is neither mechanical nor pathological, but is found in the actions and reactions of the tissues and the media. 7. Surgical intervention is consequently useless. To open the pouch merely means that we open the canal of the ependyma and allow the escape of the spinal fluid. The injection of a caustic into the pouch means its injection into the cavity of the central nervous system.

Intracranial Hemorrhage in the New-born.—W. Reynolds Wilson^{*} classifies and describes the various forms of intracranial hemorrhage. As to diagnosis, the evidences of central paralysis are usually indicative of hemorrhage. The condition of the anterior fontanelles should be noted; in hemorrhage the intracranial pressure is greatly increased, causing a bulging of the fontanelle, whereas in athrepsia or acute conditions accompanied by defective nutrition there is a depression. Extensive meningeal hemorrhage is not likely to be absorbed. Hemorrhagic conditions occurring *sub partu*, when associated with the milder degree of asphyxia, may permit of recovery. The latter effects of hemorrhage, resulting in secondary pachymeningitis, may be observed. Permanent contractures, idiocy, and sensorial disturbances may be the final outcome. Encephalitis and leptomeningitis are rarely observed as consequences of hemorrhage. Hemorrhagic foci compatible with

life may exist, and in some instances may be accountable for the origin of external hydrocephalus. According to Jewett, the primary object in treatment in hemorrhagic lesions occurring during birth and associated with asphyxia is to overcome the atelectasis by forced respiration. Schultze's method for the induction of artificial respiration, warm whiskey baths, and inflation of the lungs by forced inspiration should be resorted to. The infant should be regularly immersed in a warm bath (temperature 105°) at intervals of an hour. While in the bath the surface should be gently rubbed. In the intervals between bathing the infant should be enveloped in a light blanket and the peripheral circulation stimulated by heaters applied to the lower extremities. An ice cap should be constantly applied to the head. Small doses of sodium bromide ($\frac{1}{2}$ gr.), combined with tincture of digitalis ($\frac{1}{4}$ gtt.), may be given at two-hour intervals. Inhalations of oxygen may be used to counteract the results of inactivity of the respiratory centre. In case the infant is unable to suckle, human milk may be administered after being pumped from the breast. If breast milk is not obtainable, peptonized milk, one to seven, or a mixture containing two ounces of milk, two of cream, fifteen of sterilized water, one of lime water, milk sugar $3\frac{1}{4}$ drachms, may be given by means of a medicine dropper. In the writer's experience the administration of whiskey is without benefit.

Leucocytosis in Diphtheria.—M. Bize,¹ apropos to some recent articles on the subject, recalls to mind several conclusions reached by him about two years ago. They are the following: 1. Diphtheria is nearly always accompanied by hyperleucocytosis. The number of leucocytes may reach not merely 20,080, as Heim has found, but 28,300 (Schlesinger), 31,620 (Bize), 60,000 and more (Bouchut). 2. Very benign and possibly very severe cases may form an exception to this rule. 3. Hyperleucocytosis continues until death, if that occur. It gradually diminishes with oscillations during convalescence. 4. Injection of Roux's serum usually causes a rapid diminution in the number of leucocytes, followed by a hyperleucocytosis, which, however, does not reach the degree of the primary one. 5. In some cases the injection of serum does not modify the leucocytosis because of insufficiency of the dose, in which case a second injection is necessary to produce the desired effect. 6. Eruptions due to the serum are accompanied by a pronounced hyperleucocytosis. 7. Injections of serum may increase the number of polynuclear neutrophiles, but may also diminish their number. A child over 3 years of age may recover in spite of this diminution of neutrophiles during the days following the injection.

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ORIGINAL COMMUNICATIONS.

**A VISIT TO THE WARDS OF THE PRO-MATERNITY HOSPITAL:
A VISION OF THE TWENTIETH CENTURY.**

"There is a fall in the birth rate."

BY

J. W. BALLANTYNE, M.D.,
Edinburgh, Scotland.

THE Pro-Maternity is connected with the Maternity Hospital by a covered way. Both buildings stand in the same large piece of ground in the environs of Weissnichtstadt; the Maternity is considerably the larger of the two, but there is plenty of space round the Pro-Maternity for the construction of additional pavilions if it should be found necessary to enlarge it. Weissnichtstadt is proud of its Maternity, and justly so, for it is a well-equipped, well-built, and splendidly officered institution of its kind; but pride is not the feeling that Weissnichtstadt has when speaking, or indeed thinking, about its Pro-Maternity. Like the toast of the Queen to an Englishman, or the Fatherland to a German, so is the naming of the Pro-Maternity to a dweller in Weissnichtstadt; it rouses a feeling of pride, true, but that passes rapidly into enthusiasm, and that into a state of placid self-satisfaction and con-

scious superiority. For Weissnichtstadt is the only town in the world that possesses a Pro-Maternity.

Weissnichtstadt, as every one knows, is the chief town in the neutral territory (*neutrales Gebiet*) in the Rhineland; and a more suitable situation could scarcely have been imagined for the carrying out of the great and epoch-making experiment of prenatal treatment and puericulture on a large scale. Lying between Germany and France; between the philosophy, deep-seated and profound (*gründlich*), of the Teuton, and the inventive, almost imaginative enthusiasm of genius (*l'enthousiasme du génie*) of the Latin—lying, I repeat, in such an ideal situation, between the gunpowder and the spark of medical progress, the result of the experiment, if any result were at all possible, could not be in doubt. The determining cause of the great experiment was in some ways commonplace enough; it was the sudden and considerable drop in the birth rate of Berlin which, following soon after that which had given Paris an unenviable notoriety, threw the government of Germany (metaphorically) into the arms of France; in the presence of a common danger—that, namely, of national sterility and ultimate extinction—old animosities were forgotten and possibly also past insults were forgiven. Stringent Franco-Prussian measures were taken to insure the procreation of large families; but, alas! with little or no result, there being some people who were blind to their national danger and most wide awake to their personal comfort and ease. Then, in the midst of governmental despair, the brilliant thought, inspiration almost, came into one of the profound minds of Germany that if the new-born infants who perished yearly in such numbers (250 or more out of each 1,000) could be in future saved alive, that would at least stave off the pressing danger for a long time. The idea was good. But a French savant with the peculiar genius of his race had a better. Let us, said he, prevent the miscarriages and that most terrible of all events (*événements*), the dead birth, and cure before birth the diseases and deformities of the fetus. The German proposal was accepted, the French was received with acclamation. But were both possible? Was, in fact, either within the range even of the possible? The German suggestion was at once adopted and was soon being tested in all maternities, not only in France and “the Fatherland,” but all over the world. The French proposition it was decided to attempt in one specially prepared and appropriately situated hospital in the Alsace-

Lothringen country. Thus the Pro-Maternity of Weissnichtstadt sprang into being, originating in the common needs and genius of two great nations, furnished within and without by the princely munificence of an American (Chicago), and officered with the most international medical staff that the world had ever seen.

The morning upon which I paid my first visit to the Pro-Maternity was one of those perfect mornings that one gets in the Rhineland, and the hills all round Weissnichtstadt were white with apple blossoms, for it was springtime. As I approached the large iron gateway that gave entrance to the grounds around the building, I could not fail to be struck with the appropriateness of the inscription which was placed above it in three languages which I knew, and in a fourth which I guessed to be Hebrew:

"Teach us what we shall do unto the child that shall be born."

"Uns lehre was wir mit dem Knaben thun sollen, der geboren soll werden."

"Nous enseignez ce que nous devons faire à l'enfant qui sera né."

The inscription breathed the same spirit of the true seeker after truth as was shown also by the heading or motto on the note paper and official documents of the institution—viz., "A wise prophylaxis" and "Avoid the guesser's darkening of knowledge."

I was warmly welcomed by Dr. Med. Geburtsmal, whose acquaintance I had previously made, and who had kindly promised to show me some of the more interesting cases. He and Dr. Med. Mondkalb were the German representatives on this most international of hospital staffs. I knew also Dr. Lœufmalade, a Frenchman, and Dr. Embryonowsky, a Russian; but the others were mere names to me, except, of course, the medical head of the staff, Dr. Anthony Nathan Patholog, of whom it was reported that he came of mixed blood, with something of the Jew in him. But to me, on that morning, the members of the staff were of less importance than the patients, although I must say that Dr. Feto, of Florence, and Dr. Teras Teratos, of Athens, to whom I was introduced for the first time, were most interesting men.

We visited first *La Salle des Innocents*, where several cases of syphilis insontium were under treatment. We stopped to speak to one young woman, pregnant about five months. Geburtsmal said that she was free of syphilis herself, but the

father of her fetus was not, and she was being treated with mercury for the sake of her unborn infant in the first place, and for her own sake too. "But are you sure, Geburtsmal," said I, "that the mercury passes through to the fetus?" "We are sure that it gets to the placenta, at any rate," he answered, "and a great part of the placenta is truly an organ of the fetus and one of its most vital parts." We then passed to another ward, meeting on our way a band of middle-aged men. "Who are these?" asked I, for they all saluted my companion. "Oh! these," he replied, "are our students." "Well advanced in years, some of them," was my comment. "True," he said, "but full of student life and even fun. You might scarcely credit it, but the man with the long white beard invented the names for the patients of the Pro-Maternity and Maternity, nicknames we might say, calling those in the former institution the 'preparantes' and those in the latter the 'laborantes.'" We now entered the ward in which the attempt was being made to prevent abortions and premature labors. "Do you still use chlorate of potash?" I asked. "Oh, that *natürlich*, but much, much else," was the answer. "We attend to the position of the uterus, the state of the excretory organs, the relation of rest to exercise, the coefficient of nutrition." "What do you mean by that?" "Well, we mean the relation of the constituents of the food taken to the excreta; we know what the proper relation ought to be to grow a normal fetus." "That being known," I said, "makes the rest easy." "Oh, no," he replied; "you forget that the fetus also excretes through the mother—that complicates matters; but we are learning how to eliminate that factor, or, rather, how to allow for it in the general coefficient. We expect great results in the cases in which a woman has previously had still-born children, still-born on account of their large size; we hope to check the over-nutrition of the fetus." "It used to be suggested, was it not, to induce premature labor in such cases?" Geburtsmal turned sharply on me with a gleam of anger in his Saxon blue eyes. "Premature labor! The worst thing that can happen to a fetus is to be turned out of doors before his time has come. When such a thing occurs and we have to send a case through the covered passage (the 'hard canals,' as our student friend calls it) to the Maternity before its time, we of the Pro-Maternity count it a disgrace."

One of the most interesting of the wards was yet to be visited. Above its portal was the word "Heredity." We

stopped at the couch of a woman of 30 years of age. It was explained to me that she came of a remarkable family of bleeders; in herself the hemophilia showed itself only in postpartum hemorrhage and in the production of hemophilic male infants. "She is six months pregnant again, and of a male fetus" ("How do you know?" I interpolated, but my friend did not seem to hear), "and we are giving her chloride of calcium and iron, arsenic, and strychnine. We confidently look for a very astonishing effect (*ein Effect sehr eclatant*)."

"Are you hopeful, too?" I asked the patient. "Ah, monsieur," she replied, "my life has been so full of griefs and little graves that I willingly do anything and continue to hope."

I had a peep into the ward of the habitual inebriates, who were being kept from all alcoholic preparations during pregnancy. "A great success there," said Dr. Ariston Hudor, who was in charge. "Many alcoholic women have given birth to a living infant for the first time after being for eight months in that ward." We ought to have visited the laboratories where the chemical and microscopical investigations of the urines and excreta, etc., were carried out; but I had no time for that or for the Röntgen Room, where the art of antenatal diagnosis was being perfected. With the promise of another visit before long, I left, with Geburtsmal's parting words ringing in my ears: "In this twentieth century, Mein Herr, we prevent everything, war, disease, hurricanes—everything except the doing of good to others."

24 MELVILLE STREET.

INFANT-FEEDING.

A CLINICAL LECTURE DELIVERED AT THE NEW YORK POST GRADUATE
MEDICAL SCHOOL AND HOSPITAL.

BY

HENRY DWIGHT CHAPIN, M.D.

(With illustration.)

THERE is no study of greater interest and importance than infant-feeding. It is a subject that is hackneyed, but always interesting, and one in which you will find many different opinions.

In the past ten years there has been a very radical change in our methods of feeding infants. The old practice of sterilizing and mixing cow's milk and water in various proportions has given way to a more correct method, and now we aim to get the percentage of the various food principles in our modification of cow's milk approximately the same as in mother's milk. Like many other good things, this has gone to an extreme, and we must not think that by an extremely fine alteration of percentages the problem of infant-feeding has been solved. We get cases where the finest shades of percentages fail, and I call your attention to the fact that there is something else besides percentages to consider in modern infant-feeding; the pendulum has swung too far in that direction.

There are two important questions to be answered: 1. How can we get good, clean cow's milk? 2. How can we modify it so as to make it like mother's milk?

There has recently been a great deal of study given to this subject, particularly by the Department of Agriculture at Washington. I would advise you to send for the literature which they furnish. The amount of work which has been done by them is enormous and exceedingly valuable, and we have learned some interesting points about various kinds of milk, for they have experiment stations in all parts of the United States and their conclusions can be accepted as authentic for all the country.

Cow's milk is rendered unfit for use by the growth of bacteria. There are two hundred species of bacteria that grow in milk, and of these about twenty produce lactic fermentation. We can tell, with reference to cow's milk, whether it is fit to feed to a baby or not by the percentage of lactic acid and by the number of bacteria to the cubic centimetre. If you ask whether we can accurately differentiate these bacteria, I would say that we cannot. We can broadly divide them into lactic-acid bacteria and saprophytes. Pathogenic bacteria, such as the germs of scarlet fever, diphtheria, typhoid fever, etc., get into the milk through the water used in cleansing the vessels or from the persons who handle the milk. The lactic-acid bacteria come from the teat. The first few streams of milk have a large number of bacilli; they get into the teat between milkings. The proper method is to throw away the first few streams of milk that the milker procures, and in that

way you will do away with a large number of bacteria. It is an easy matter to direct the milker to let the first few streams go into the gutter.

The putrefactive bacteria come from the manure. All kinds of impurities are found in the stable and on the sides and udder of the cow, so that to remove the putrefactive bacteria the cows should be curried and rubbed off, just the same as horses, and the milker must be kept clean. Just before milking, the teats and udder should be wiped off with a damp cloth; then the hands of the milker should be kept clean, and the finger nails should be properly cleaned before milking.

One of the latest observers has found that, by rubbing a little vaseline on the hands just before milking, the bacteria are diminished in large number, as it prevents the scales from the teat and the scales from the hands and fingers from dropping into the milk. Thus many thousands of bacteria are kept from the milk by this little procedure.

The stable should be kept clean; it should be free from all sorts of impurities. The milkman should wear a duster over his working clothes while milking, as many sources of impurity are on his working clothes and these drop into the milk.

It comes down to a matter of strict cleanliness in the production of the milk.

The pathogenic bacteria do not come from the cows; they come from the utensils or water used about them. Pathogenic germs have been traced to the family of the milkman, and scarlet-fever germs have been carried in this way. The water used about utensils may have been contaminated by typhoid-fever germs. The tubercle bacilli may be accounted for in this way.

There has been a great deal of unnecessary fear about tuberculous infection in milk. Tubercle bacilli do not grow well in milk. There have been very few authentic cases of tuberculous infection from cow to man. I do not deny that tuberculosis may be spread by milk, but I do think the danger has been greatly exaggerated. A great deal of harm has been done in raising a scare and in keeping people from drinking good, wholesome milk through fear of the tubercle bacilli. If the udder is affected by tuberculosis the milk is more apt to be infected by the bacilli; but you know animals that have tuberculosis do not always have it in the udder, and it is very

uncertain whether in these cases the milk can actually be infected by the tubercle bacillus.

When the milk has been collected with the care I have described, it should be mixed and at once aerated and cooled. The rapid cooling of the milk is the one thing that the physician should insist upon. Bacteria will not grow well in milk below 50° F. Last summer milk was collected in Illinois, New Jersey, and New York, rapidly cooled and aerated, and sent to Paris and drunk on the Exposition grounds, and then it was better than the average milk sold on the grounds. I have as authority for this statement Major Alvord, of the Department of Agriculture at Washington, and know that it is true.

If the milk is not rapidly cooled, the bacteria get in that grow in enormous numbers. The important thing, then, is to insist upon its being rapidly cooled after it has been collected. It should be kept below 50° F. if it is to be sent a long distance; if for a short distance, 60° F. is cool enough. The milk should also be strained before it is cooled, which will remove any impurities that may have gotten into it. Warm milk should never be mixed with milk that is cooled, and it is only by attention to these details that a clean milk can be successfully produced. The dairyman can get all these necessary utensils at a dairy supply house for a comparatively small sum. This, in my opinion, is the most important part of infant-feeding, much more important than percentages, which we will discuss later.

If you get a baby a clean milk you are on the right way for successful infant-feeding; but the trouble is, we do not commence at the right end. Anything that masks the effect of dirt in milk is bad. The two principal chemical preservatives of milk commonly used are boric acid and formaldehyde. I used sterilization with the others at first in hospital and in private practice particularly, and, like most others, I have abandoned it. Why? Because the cases did not do well upon it. It breaks up the fine emulsion of milk. You will see the cream collecting in fat drops on the top of the sterilized milk. It also produces certain changes in the casein, which in many cases make it difficult to digest. And many others have found that when babies are fed on sterilized milk they do well to a certain point and then do not gain in nutrition. In other words, the changes produced are not uniform. In very hot weather, when I cannot be sure of the milk, I pasteurize it.

Heating it to 170° F. destroys most of the bacteria and prevents their development in any active degree.

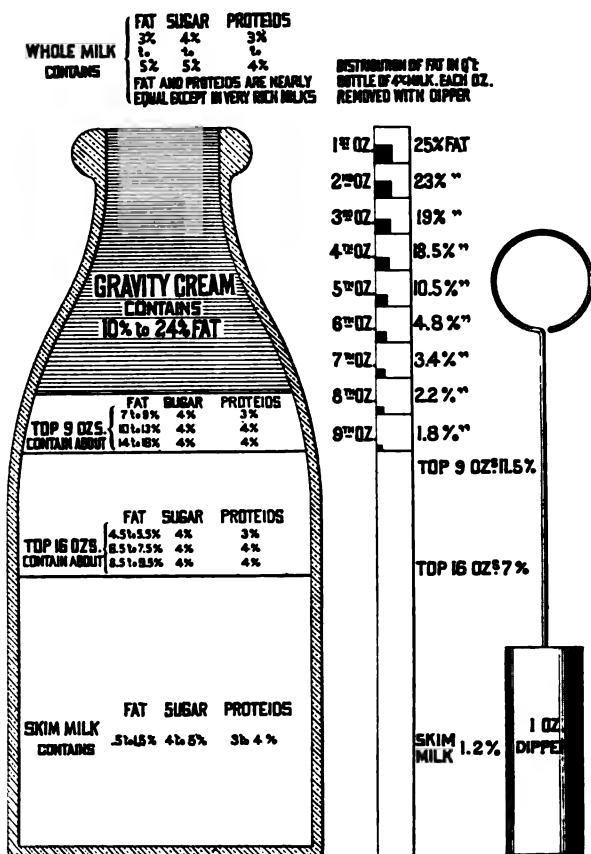
Now, how can we change our cow's milk into the same percentages as human milk?

	Fat.	Sugar.	Proteids.
Human ...	8 to 5.	6 to 7.	1 to 2.
Cow.....	8 to 5.	4 to 5.	8 to 4.

Here is approximately the difference between the two milks. Of course, we see at a glance what we want to do. In cow's milk the fat is about the same, the sugar is not what it should be, and the proteids are from three to four times greater. In order to get our percentages right, laboratories have been used in various parts of the country, where a prescription can be written by a physician for fats, sugars, proteids, in any strength that he wishes and in any amount, just as though he were prescribing drugs. Of course, these laboratories are not universally present; they are only in the larger cities, and the feeding of the baby through them is quite an item of expense. If you can get an absolutely clean milk you can modify it yourself, and the method which I have devised is sufficiently accurate. It is based upon a very simple principle of milk that is universally seen—that is, the deep setting creaming of milk in bottles.

If milk is put into a cylinder and kept at a low temperature—50° to 60° F.—in from twelve to twenty-four hours nine-tenths of the butter fat is on top. The milk is put into a cylinder, which is the bottle, and is kept cool, otherwise it will sour. You can always tell by the cream line whether the milk has been bottled in the dairy or not till it reached the city. The milk should always be put into the bottle in the dairy, and not in the shop in town. If this has not been done it means it has been handled too much. The less milk is handled the better. If you do not see that cream line you will know that the milk has been bottled within a few hours. Take the jar up and see if it is not so. That is a very easy test of telling whether your milk has been actually bottled on the farm. There is another thing that we can control. In cow's milk proteids follow the fats up to 4½ per cent. It is a fairly universal rule.

That is, supposing your milk contains 3 per cent fat, you will have 3 per cent proteids. Supposing there is 4 per cent fat, you will have 4 per cent proteids; 5 per cent fat, you will have 4 to 4½ per cent proteids. In a word, the proteids and fat in cow's milk run in almost identically the same percentages up to 4½ per cent. Here we have the key to our simple plan of modification.



Cream varies in richness, so that when the books write, "Take so much cream and get your percentages," it is very inaccurate. My method is to take all of this cream and a certain proportion of skim milk with it. The cut shows a one-ounce dipper which will go into any thirty-two ounce milk bottle; I had them measured in all parts of the country. And

the first nine ounces here contain all this cream in various strengths and give you a percentage of fats and proteids of three to one. I do not care whether the milk is rich or poor. Suppose you want a ratio of three to one of fats and proteids. Take out the first nine ounces, the top ounce to be taken out with a spoon. You cannot interfere with your cream by gentle handling. Now we can let the dipper down into the bottle.

Not one person in a dozen can siphon; the average maid will suck it out when you tell her to siphon. Take out the first ounce, take out the second, etc. This is just as easy as preparing condensed milk when you describe it to the people. Take the first nine ounces and use that only to feed the baby. What have we got? That depends upon the strength of the milk. You must know what kind of milk you are dealing with. We can tabulate the quality of milk so far as the cows are concerned. Full-blooded Guernseys and Jerseys give milk containing 5 per cent butter fat; average-grade Jerseys and Guernseys give 4 per cent; Holsteins and common stock, 3 per cent. In any locality in which you practise, all you have to do is to find out if you are getting milk rich in fat or poor; and the poor in fat is just as good as the rich, if the milk is clean and it runs uniformly. The finer breeds of Jerseys and Holsteins are more apt to be tuberculous; they are more nervous and easily disturbed, just as a high-bred woman will have a more sensitive nervous organization.

Of course, the "one cow" delusion has been given up long ago. Get the average from twenty or thirty cows rather than the milk from one cow. I would just as willingly use a 3 per cent milk as a 5 per cent milk, as the milk is more uniform.

The first nine ounces give you a proportion of fats to proteids of three to one, which is just what it is in mother's milk. But for illustration take a milk containing about 4 per cent of fat. The first nine ounces will contain 12 per cent fat, 4 per cent sugar, 4 per cent proteids. Add three parts of a diluent and we have 3 per cent fat, 1 per cent sugar, 1 per cent proteids—exactly the same as in woman's milk, except in the sugar. In order to bring the sugar percentage up, add one part of sugar to twenty parts of solution. I generally use cane sugar. An even tablespoonful of granulated sugar equals half an ounce approximately, and one scant teaspoonful equals a drachm. Half again as much milk sugar equals the same weights.

Taking the same milk, we find that in the first fifteen or sixteen ounces the fats and the proteids are two to one; that is, the first fifteen ounces will run 8 per cent fat, 4 per cent sugar, 4 per cent proteids. Dilute that twice and you get a ratio of two to one; that is, one part of the first fifteen ounces, one part of diluent, the dilution then being two—4 per cent fat, 2 per cent proteids; that is a very valuable formula for older children. A child of 5 or 6 months may require a 2 per cent proteid.

Suppose you have a 3 per cent milk; the first nine ounces give a 9 per cent fat and a 3 per cent proteid; the dilution is three—that is, take one part of this milk and two parts of diluent, and you have 3 per cent fat and 1 per cent proteids, which is what you want to get. With a rich 4 per cent milk we have 12 per cent fat and 4 per cent proteids; there you have again three to one. Or, suppose you have a 5 per cent milk and the first nine ounces there give you 15 per cent of fat and $4\frac{1}{2}$ proteids, the dilution would be five. There again you have practically three to one—one part of this rich cream and four parts of diluent. You can just as well deal with a 3 per cent milk, but you do not have to dilute it so much. In that way you would invariably get a ratio of fats and proteids of three to one, which is the ratio of woman's milk.

When children get to be 5 or 6 months old they want more than 1 per cent of proteids. Then you take the first fifteen to sixteen ounces from the bottle; dilution would be two—that is, one part of these first fifteen ounces and one part of diluent, that would give you 3 per cent fat and $1\frac{1}{2}$ per cent proteids. You see the advantage of this system is that you can increase your fat from day to day on a sliding scale.

To bring it out clearly, the percentages may be tabulated as follows: In actual practice, milk varying between 3 and 5 per cent butter fat will be met.

		Fat. Per cent.	Proteids Per cent.	Sugar. Per cent.
Very rich milk	{ Top 9 dippers..	15	4 to $4\frac{1}{2}$	4
(Butter fat 5 per cent).	{ Top 15 dippers	9	4 to $4\frac{1}{2}$	4
Rich milk	{ Top 9 dippers..	12	4	4
(Butter fat 4 per cent)	{ Top 15 dippers	8	4	4
Thin milk	{ Top 9 dippers..	9	3	4
(Butter fat 3 per cent).	{ Top 15 dippers.	6	3	4

The above figures are approximately correct, as shown by assays of butter fat. No matter whether milk is rich or poor, practically the same percentages will be obtained by this method. Rich milk must be diluted more and thin milk less to preserve the proper proportions. To find the percentage, divide any of the above figures by the dilution. For example, one part cream to three parts diluent will give a dilution of 4.

	Fat.	Proteids.	Sugar.
4)	12	4	4
	3	1	1

	Fat.	Proteids.	Sugar.
4)	8	4	4
	2	1	1

To get the same percentage from thin cream, use one part cream to two of diluent, giving a dilution of 3.

	Fat.	Proteids.	Sugar.
3)	9	3	4
	3	1	1 $\frac{1}{3}$

	Fat.	Proteids.	Sugar.
3)	6	3	4
	2	1	1 $\frac{1}{3}$

As I have said before, the importance of fine percentages has been very much over-estimated by books and teachers. It is not so important to get fine percentages as to get something that will agree with the baby, and that you can tell from day to day by watching the diaper. If the baby does not digest casein, use more diluent; if the baby is vomiting, it shows you are using too much fat. Where there is too much fat the stomach rejects it; where there is too much casein the bowel is in trouble; where the baby has colic and irritation in the abdomen several hours after eating, reduce your casein, and that is as far as percentage-feeding need be carried. All you have to do in this method is to get one of the dippers. Find out how your milk is running in butter fat and you can give percentage-feeding with sufficient accuracy. My contention is that the less you manipulate milk for a baby the better, and when you are throwing it off by centrifugal force to get thick creams you break up the emulsion; in this method, by the use of gravity cream and the dipper, you do not.

The diluent is quite as important as the percentage.

We can divide milks into two general classes, hard-curding milks and soft-curding milks. The type of hard-curding milk is cow's milk—that is, when rennet and acid are added, casein is thrown down in hard, lumpy curds. The second variety is soft-curding milk; the casein, by rennet and acid, is thrown down in ht, flocculent masses. Woman's milk is of the soft type.

That is the great distinction which it is important for us to bear in mind.

In feeding babies we have to take the hard-curding milk, which is cow's milk, and feed it to a baby that is used to a soft-curding milk from the mother, and that is where the great trouble comes. The hard, lumpy masses of casein that are thrown down by the rennet and acid in the stomach are difficult for the baby to digest, and it is well to bear in mind that the digestive enzymes act by contact, and by contact alone. Almost all indigestion that we have in infants, as well as adults, is due to food getting into the stomach in hard lumps, so that the enzymes cannot get at it. The casein of cow's milk clots in hard, lumpy masses, the digestive enzymes of the stomach cannot get at it, and any means by which we can break up the clot and make it more flocculent will be the means of increasing the digestibility of the milk.

Decoctions of the cereals, like barley water or wheat-flour gruel, are effectual diluents. Some years ago it was thought that simple water was just as good a diluent as gruel. I made a series of experiments on dogs, using barley water and afterward taking it out of the stomach. Invariably, where the gruel was used, digestion was more complete. I proved that the addition of the gruels to cow's milk was most efficacious in splitting up the hard clot of the milk. Recently I have much preferred dextrinized gruel to the plain gruel.

It was formerly thought that babies could not digest starch at all. Intestinal secretions can digest starch to a certain extent. The pancreas is not active before the third or fourth month; but the older teaching that a baby could not digest starch in any form is not true, but it is desirable to reduce the starch in the gruel to a small amount. This we can do by dextrinizing it. The starch is digested, leaving the connective tissue or cellulose of the grain to attenuate the clot. I have demonstrated that repeatedly. In this way we do away with any possible disadvantage and gradually increase the utility of the gruel.

I generally order gruel to be made as follows:

Two tablespoonfuls of wheat flour or barley flour are made into a paste with cold water and then added to a quart of water. It is then boiled for fifteen minutes. If you wish an ordinary gruel, there you have it, by the addition of a pinch of salt. Wheat is as good as barley, although barley may be bet-

ter if the baby has diarrhea. If the baby is constipated use oatmeal gruel.

I prefer to dextrinize this gruel in the following way: You can prepare your diastase at home by taking a tablespoonful of ordinary malt barley grains, put into a teacup with enough water to cover it—about two tablespoonfuls of water—and place that in the refrigerator over night. In the morning you can take off one tablespoonful of the thin fluid, that looks like tea, that contains active diastase. After putting it into the gruel, in a few minutes you can see it become thin. Of course, if you put your diastase in when the gruel is boiling it is killed. Let your gruel stand until it is cool enough to taste, then put in your diastase and stir. When it stands it separates into the clear part, which is soluble starch, and the part underneath, cellulose. In this method you have an efficient aid to digestion of the casein in cow's milk, because you are making a hard curd soft and flocculent, and you are also increasing the nutritive value by the digestion of the starch.

If you do not wish to prepare the diastase you can buy it. Sometimes babies object to the taste; there is a preparation which I have used—cereo, a glycerite of diastase, one teaspoonful of which will digest a pint of gruel or a saucer of oatmeal in five minutes. This does away with the objection offered by those who say a baby was not meant to digest starch; neither was a baby meant to digest cow's milk.

RESULTS OF TREATMENT OF CANCER OF THE CERVIX, AND THE UNRELIABILITY OF STATISTICS ON THE SAME.¹

BY

J. M. BALDY, M.D.,
Philadelphia, Pa.

WITH our present knowledge of the results of cancer of the cervix uteri, it is somewhat startling to read many of the reports of this disease of the past five years or so and to contemplate the many times repeated assertion of from 40 to 80

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, February 21, 1901.

per cent of cures in the hands of surgeons. We know now that such reports are worse than useless and could only have been arrived at either by a most wilful juggling of figures or by a lamentable carelessness in the observation of facts and the recording of the same.

Cancer affecting the cervix uteri is one of the most deadly diseases with which medical men have to deal. By far the largest proportion of these patients eventually die of cancer, be it from the primary lesion or from a recurrence. And this in spite of all that has been done for them either surgically or medically.

It is to-day almost universally conceded that in its inception the disease is a local one and that the hope of a cure rests in an early removal of the disease—in other words, in surgical methods. No doubt cancer is curable if removed sufficiently early, but herein lies the hitch. What is sufficiently early? No man has yet solved this question. What occasionally appears a hopeless case, after an operation remains well for years; what seems a most promising one, very frequently, dies of the disease within a year or two. It is this lack of precise knowledge as to the line of safety which often staggers one in his belief of a local origin for the disease, and yet, as far as our present knowledge is concerned, it all tends to force the conclusion of primarily a local disease. Be this as it may, the hope for the future appears to me to rest in a more careful clinical study and diagnosis, and in this alone. The microscopic reports are well enough as far as they go, but first we must have a more careful education amongst physicians as to the clinical features, else in the future, as in the past, these cases will continue to come to us too late for a cure and little progress will be made in overcoming the disease. I am firmly convinced that too much attention is being placed, especially in educational institutions, on the laboratory and too little on clinical teaching. In this matter of cancer everything depends on the clinician; the microscope is secondary and corroborative.

It is only fair to ourselves that we recognize the true position of cancer to-day, wipe out the past and begin anew—and it is lamentable to have to acknowledge that we must begin again almost from the bottom. Most cases of cancer of the cervix die of cancer sooner or later, whether a curettage and cauterization together or separately have been performed, the cervix amputated low or high, the uterus removed by the

vaginal or by the abdominal route or by both, the broad ligaments and the pelvic glands be removed or not. The result has been the same in spite of the extravagant claims of innumerable surgeons, especially the Germans. A careful reading between lines of recent reports of known and trustworthy men shows that they are having a similar experience to my own. For instance, Penrose says his results have been "most discouraging," and is able to quote but two or three of his patients who have not had recurrence. Kelly's work at Johns Hopkins, as reported by Cullen in his work on "Cancer," bears out this conclusion. A study of these cases (they are the only careful and complete ones of recent origin with which I am familiar) will show how absolutely unreliable statistics are in arriving at the truth if one is to take them only at their face value. It is claimed by these statistics that about 20 per cent of patients out of a total of 73 are cured—of course this means 20 per cent of those operated upon. This is at once a very low claim, as such claims go, but when one studies the tables for a time it suddenly dawns upon one that 68 patients with cancer of the cervix have been refused operation. In other words, the cases upon whom operations have been performed are picked cases. It is at once apparent that this 20 per cent as applied to cases operated upon is one thing, but as applied to cancer of the cervix cured is a totally different thing—as applied to the cases who have applied to Johns Hopkins for relief, the per cent of cures drops at once to about 10 per cent. Even take 10 per cent and consider that this includes every case of possible mistake in diagnosis, and what then? Of course every case in which such a mistake has been made will have no recurrence and would have to be deducted from the 10 per cent of cures. We must consider that all the doubtful and border-line cases come under this heading, even those cases in which there have been few clinical manifestations of the disease and it has been pronounced such from microscopic examination, routine in character, and where probably cancer had not been even suspected beforehand. Where one has a sublime faith in the results of microscopy, even in the earliest and most doubtful stages of tissue transition to cancer—and who can have the unlimited faith asked of us by some men, when the uncertainties and disputes amongst the pathologists themselves are considered?—one must again make a cut in the per cent of cures, and 10 per cent fades from view as a deception.

Once more to read between lines. Cancer returns after one, two, three, four, or more years. Confine ourselves to, say, two or three years, and call all cases cured who remain well after this time. Of the 15 cases reported cured in these statistics, 7 were operated upon within two years and 2 others within two and a half years. Once again must there be a cut in the percentage of cures, and it is not unreasonable to assume that the statistics of Johns Hopkins Hospital show a cure of 5 per cent or less only, even accepting them at their own valuation.

This has been my own experience in this disease. I can say with absolute confidence that I do not know to-day of even 5 per cent of cures of cancer of the cervix which have passed under my observation. It is one of the darkest chapters which surgery has been forced to record, and there seems little light ahead. If this brief paper will aid in a small way to call attention to the absolute failure of surgery in the past to stay this lesion and to stimulate renewed activity in its study, I would be more than content. And I would reiterate that my belief is firm in the efficiency of a sound and careful study of the clinical manifestations and phenomena as against dependence on the microscope. Of this I shall deal more fully in a subsequent paper.

A FLAP OPERATION FOR ATRESIA OF THE VAGINA.¹

BY

GEORGE H. NOBLE, M.D.,
Atlanta, Ga.

(With seven illustrations.)

THE unsatisfactory results in operations for atresia of the vagina, especially in complete occlusions of that canal, are known to you all, and doubtless disappointment from tediousness of treatment has been the rule in these cases. Therefore I wish to present to you a little work that I have been doing in this line, with a view of describing my method of flap-cutting.

¹ Read before the Southern Surgical and Gynecological Association, November, 1900, at Atlanta, Ga., and before the Pan-American Medical Congress, February, 1901, at Havana, Cuba.

I have tried taking flaps from the neighborhood of the perineum and inner aspect of the thigh, but it is difficult to secure skin free from hairy growth. Besides, these regions, especially the latter, are so far from the vaginal orifice that long pedicles are required; and as the limbs are subject to considerable motion, the places from which the flaps are cut give a great deal of discomfort or create considerable soreness even when covered with skin grafts. Neither does the skin make as good a lining for the vagina as the mucous membrane, nor can I say that I am pleased with the results of skin-grafting in the vagina. The grafts are applied to rough surfaces and do not take hold as readily as expected, and are easily rubbed off in changing the dressings, which is a source of great disappointment to the operator.

The most satisfactory results that I have obtained have been by cutting the flaps from the labia. In extensive or complete destruction of the vagina it is often difficult to secure enough mucous membrane to cover the entire denuded surface. The principle, therefore, is to cover the posterior and two lateral walls of the vagina with two or more flaps, leaving a space or strip between them from one-half to three-quarters of an inch wide. The anterior wall will take care of itself or may be covered by grafting later from other parts of the body. Where it is necessary to cover extensive surface, all the mucous membrane and part of the skin on labia majora and sometimes the nymphæ must be utilized. The latter, however, should not be used, on account of disfiguration, if it can be avoided. The flap should be outlined by beginning at the side of the clitoris at point marked *A* (Fig. 1), and extending obliquely upward and outward to the muco-cutaneous margin *B*, then following the line of junction of the skin of the mucous membrane down the outer side of the vulva to a point on a level with the posterior commissure, *C*. The line should curve inward and below the vaginal orifice, and stop about three-fourths of an inch from the margin of the opening. The line marking the inner edge of the flap starts at the beginning point, *A*, mentioned, and runs downward in the groove or folds between the labia majora and nymphæ (dotted lines), and at the lower extremity of the latter, *E*, turns into the vaginal orifice, then downward toward the median line of the vagina about the point marked with a small *x*. The line from *E* to *x* is not shown in the picture, as suturing of the skin and mucous membrane of the vagina has displaced the latter, and

twisting of the pedicle at *D* covers its terminal point. The pedicles may be cut external to the vagina; in that case the inner line would continue along the margin or ostium vaginae and terminate at *D'*. The flap on the opposite side is cut in the same way. An important point is to make the flap thick, and especially the pedicle; for if the latter contains an artery of fair size its life will be insured, provided, however, that no



FIG. 1.

tension or twisting of the pedicle is permitted that will materially interfere with the blood supply and cause strangulation. The flaps are then turned into the vagina (see Fig. 2) and applied to the lateral walls. The angles marked *A'*, *B'*, *C'*, *D'* correspond to the same letters on the dotted lines marking the place from which the flaps are taken. The line of sutures *B*, *F*, *D* is the same shown by the same letters in Fig. 1. The

pedicle appears much narrower than what it really should be, on account of the perspective showing the concavity formed by its fitting into the curve of the vaginal orifice. It is rarely necessary to stitch these flaps, as the dressing will hold them in close apposition to the vaginal walls; but if any difficulty is experienced in this way, the ends may be loosely fastened together with catgut sutures, attaching *A'* and *B'* to the corresponding angles of the opposite flaps, allowing ample room between them to admit the cervix uteri.

In my first case I made the pedicles terminate close to the anus, hoping to get a good blood supply from that region.



FIG. 2.

The distance, however, from the anus to the posterior commissure over which the pedicles necessarily turned caused an unnecessary loss or waste of material; for I lost in length just as much tissue as was required to reach from the anus to the ostium vaginæ. Since that I have been making the pedicles of the tissue near the margin of the vaginal orifice, endeavoring to secure the blood supply through the upper branch of the superficial perineal artery or from the region of the bulb of the vestibule.

Where the destruction of the vaginal mucous membrane is not so great, and yet where there has been too much to permit

approximation of the vaginal mucosa after excision of the scar tissue (see Fig. 3) [that is, after removing scar tissue and breaking up adhesions between *I* and *II* and dissecting loose the mucosa, as shown by the dotted lines, the mucous membrane cannot be approximated, *I* to *II* and *III* to *IV*], the flaps may require turning around the axis of the vagina instead of being carried vertically downward in the direction of the long axis as above described. In that case the pedicles should be made of the nymphæ, depending (see Fig. 4), therefore, upon the blood supply they receive through their upper extremities. A great deal of tissue should be cut beneath



FIG. 3.

them in order to include the deeper arterial branches. In this way the pedicles will be attached to the side of the flap and their proximate ends will be turned upward on the margin of the vaginal orifice. In cutting the flaps the line above described should be followed, except they may be extended posteriorly to or near the median line. When these flaps are turned into the vagina their ends will be reversed; the upper one, cut near the clitoris, will be applied to the posterior wall, while the lower extremity will be applied to the anterior wall and the middle portion will lie in contact with the lateral wall of the vagina. (See the change of figures in *I*, *II*, *III*, *IV*

in Fig. 4.) They will require stitching with catgut at the ends and middle to prevent slipping when the dressing is applied. In six or eight days the pedicles may be cut loose and restored to their normal positions, filling the niches or gaps made in or near the vaginal orifice. The nymphæ are, therefore, only temporarily employed as pedicles and are afterward restored to proper functions. The third or middle



FIG. 4.

flap was cut from the mucous membrane of the prolapsed rectum and the smooth skin around the anus. The margins *G H* and *I J* correspond to the lines *G' H'* and *I' J'*. The line *G' H'* has been displaced by sliding of the skin in approximating with sutures.

The skin and mucous membrane over the entire labia majora may be removed without permanent disfiguration if the fatty

tissue is left. It will fill out and reproduce the natural fullness and rounded shape in six months' time.

Fig. 5 represents a case that came to me from South Carolina. The recto-vaginal septum was completely destroyed from the cervix downward. The white dotted lines at *I, II, III*, show the original position of the destroyed perineum. The white, granular surface, *I, III, IV, V*, is a mass of cicatricial tissue occupying the position of the destroyed vagina. The opening between *IV* and *V* is a communication between



FIG. 5.

the remaining portion of the vagina and rectum through which the menses enter the latter. In this case I resorted to a different procedure, taking mucous membrane from the rectum and utilizing it as a cover for the posterior wall of the vagina. It consisted of making an extensive flap-splitting operation after Tait's method; but, instead of splitting the flaps at the recto-vaginal junction, as is done in ordinary flap-splitting operations on the perineum, an incision was made from the extremity of the original laceration in the recto-vaginal septum and carried down the sides of the rectum a

distance from the lacerated margin equal to one-sixth of the circumference of the rectum. The line was then carried through the lower portion of the perineum just above the sphincter muscle (see the black dotted lines *II*, *IV*.) This is better shown in Fig. 6. Let the figures *I*, *II*, and *III* represent the vagina after breaking up of adhesion, and *I*, *IV*, and *III* represent the rectum. Instead of doing a flap-splitting operation at the recto-vaginal junction *I—III*, an incision was made on the side of the rectum one-sixth of its circumference from the recto-vaginal junction, or at *V*, cutting deep in the direction of the line *V—VI*, and then extended up and down as

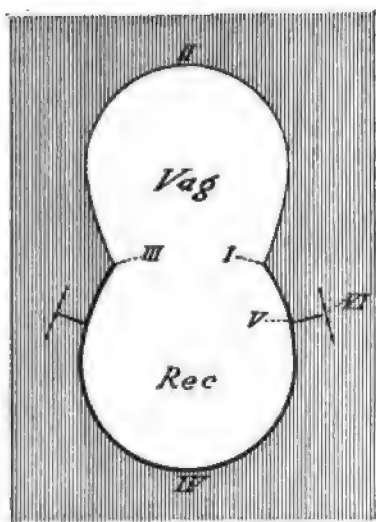


FIG. 6.

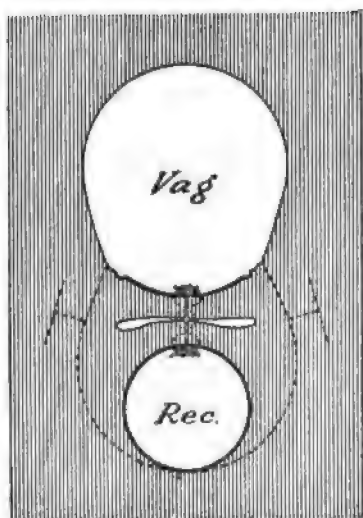


FIG. 7.

shown by the cross lines at *VI*. The new rectal margin made by this incision (*II—IV*, Fig. 5) was approximated by catgut sutures in the mucous membrane and a superimposed layer of the same material in the muscular tissue. In like manner the mucous membrane above the incision at *V* (Fig. 6) was closed with catgut, and in this way mucous membrane was turned into the vagina from the rectum (see dark lines, Fig. 7).

In addition to the above, two flaps were cut from the vulva and turned into the vagina, as described in Figs. 1 and 2. The results were very gratifying.

Now I am going to show a simple thing, but an important

one, in dressing these cases. In order to flatten out the granulations and secure good surface between the flaps, it is necessary to make a certain amount of pressure with a smooth surface. I tried rubber tissue, but found it difficult to apply evenly; I tried folding it over a cylindrical speculum, but this was unsatisfactory because ridges would form on either side where the tissue folded upon itself. The best thing is to slip a rubber bag (condom) over a Fergusson cylindrical speculum. Then, by means of strips of antiseptic gauze or sterile cotton, it can be tamped or distended to any size or shape desired, spreading a smooth surface over the granulations and flattening them in a satisfactory manner, which will facilitate the growth of the epithelium.

183 SOUTH PRYOR STREET.

MUSCLE-CELL SARCOMATA OF THE UTERUS.

BY

WILLIAM H. WEIR, M.D.,

Demonstrator in Gynecology, Western Reserve University; Resident Gynecologist
to the Lakeside Hospital, Cleveland, O.

SARCOMA of the uterus is among the uncommon conditions met with in gynecological practice. The majority of these tumors originate in the endometrium, where they form circumscribed polypoid growths or diffuse infiltrations, both varieties subsequently implicating the uterine wall. Not a few sarcomata, however, originate in the uterine wall or in fibromyomata, and form single or multiple growths, diffuse or circumscribed, and of varying consistence. Many closely resemble fibromyomata and can be differentiated only by microscopic examination. Sarcoma of the cervix is less common and assumes a peculiar grape-like form, or appears as a diffuse infiltration, while at other times it takes on a circumscribed polypoid or nodular type.

In the three cases here reported the tumors apparently originated in the uterine wall or in fibromyomata, none of them being derived from the endometrium. Clinically, they all suggested fibromyomata with the symptoms of menorrhagia and metrorrhagia; in only one case did the history point to a recent

origin of the condition or to malignancy. From this it would certainly seem right that the possibility of sarcomatous change in fibromyomata, even of long standing and without any recent and rapid increase in size, should be considered when advising for or against operation.

In an exhaustive monograph upon this subject J. Whitridge Williams¹ reports three cases of uterine sarcoma and carefully considers the pathological aspect of the subject, giving a synopsis of all the available cases reported up to that time. As regards sarcomata originating in fibromyomata or in the uterine wall, he divides those containing unstriated muscle cells into two classes: 1. Myoma sarcomatodes, springing from the muscle cells of a fibromyoma. (One case of his and Case 1 of our own series are apparently of this class.) 2. Myosarcoma, which, according to Williams, signifies merely a mixture of myomatous and sarcomatous elements, due, as a rule, to a sarcomatous change in the connective-tissue elements alone in a myoma, the muscle cells remaining passive. This term is very loosely employed, however, and, according to many authorities, indicates merely the previous existence of a myoma. Our Case 2 belongs to this class.

A third variety not mentioned by Williams is represented by Case 3, which appears to result mainly from the sarcomatous transformation of the muscle cells of the uterine wall, there being no evidence of a pre-existing fibromyoma; the connective-tissue elements also participating in the sarcomatous change, but apparently to a less degree than the muscle.

CASE I.—*Myofibroma Sarcomatodes Uteri arising from a myofibroma of the uterus; development of the tumor traced from both unstriated muscle and connective-tissue cells.*—E. S., æt. 37, married, admitted to the gynecological service of Lakeside Hospital May 7, 1900, gave the following history: She has always been well and strong until two and a half years ago, when she became aware of the presence of a tumor in the abdomen, which has gradually increased in size. She has suffered from cramp-like pains in the epigastric and iliac regions, shooting pains in the legs, and backache, more especially at night. Her periods began at 15, and were at first regular, but painful and profuse; lately they have been much increased in amount, the last flow continuing for six weeks. Metrorrhagia has also been frequent, and for the past two years a pro-

¹ "Contributions to the Histology and Histogenesis of Sarcoma of the Uterus." AMERICAN JOURNAL OF OBSTETRICS, 1894.

fuse, foul, brownish vaginal discharge has been noted. The patient has had no children, but has had three miscarriages, the last one five years ago, the convalescence in each case being uncomplicated.

Upon external examination a large tumor was found in the abdomen, extending well above the umbilicus and lying in the median line. The mass was quite dull on percussion and semi fluctuant, suggesting the probable presence of an ovarian cyst. No signs of pregnancy could be detected. The vaginal examination was unsatisfactory, as the mass had grown out of the true pelvis into the abdomen; the cervix was small and high up in the pelvis; the tubes and ovaries could not be palpated. The superficial abdominal veins were dilated, and a small "caput medusæ" had formed around the umbilicus. The physical examination of the rest of the body showed nothing of importance; the inguinal and cervical lymph glands were slightly enlarged, and there was a slight grade of arteriosclerosis. The urine was normal. A provisional diagnosis of fibromyoma uteri, with probable cystic degeneration, was made.

On May 17, 1900, supravaginal hysterо-salpingo-oöphorectomy was performed by Dr. Hunter Robb. On opening the abdomen the tumor was found to be formed by the uniformly enlarged, soft, dark-red uterus, and was thought to be a degenerated fibromyoma; a few easily separated, velamentous adhesions were found posteriorly. The abdominal wound was closed in tiers without drainage, catgut being used for the peritoneum and subcuticular sutures and silver wire for the fascia. The patient stood the operation remarkably well and made a rapid and uneventful recovery. The abdominal wound was found closed by first intention, without suppuration, on the tenth day after operation, when the dressing was first removed. Four weeks after operation the patient was discharged in good health; efforts to trace her since then have been unsuccessful.

The uterus,¹ amputated above the cervix, forms an almost globular soft tumor, measuring $20 \times 18 \times 18$ centimetres, the insertion of the round ligaments being 9 centimetres apart. The surface is fairly smooth and regular, except for a nodule posteriorly which resembles a fibromyoma and measures $6.5 \times 6.5 \times 5.5$ centimetres. The consistence of this portion

¹ The macroscopical and microscopical examinations were made in the Pathological Laboratory of the Lakeside Hospital.

is somewhat soft, but on section the appearance is that of a typical fibromyoma. A few light velamentous adhesions are found posterior to the uterus. On section of the specimen the enlargement is seen to be due to the presence of a large, spherical tumor in the posterior wall of the uterus. It is of a mottled yellowish color, of a very soft, semi-fluctuant consistence, and shows several small cystic areas of apparent liquefaction, the largest being about 2 centimetres in diameter. The outer border of the tumor is slightly firmer in consistence and is sharply defined from the muscular tissue of the uterine wall which encloses it. The anterior uterine wall is apparently unaffected. The uterine canal measures 12 centimetres in length, the mucosa being thin but showing no abnormality. The ovaries are enlarged, the right measuring $9 \times 4.5 \times 1$ centimetres, the left $6 \times 3 \times 2$ centimetres; but, with the exception of a few very light adhesions, both are normal in appearance. The tubes are elongated but normal, the right being 12 centimetres, the left 11 centimetres in length. The weight of the uterus, together with the tubes and ovaries, is 3,750 grammes (about $6\frac{1}{2}$ pounds).

Microscopically, sections from the margin of the main tumor show a sarcomatous structure. The tissue is richly cellular, the cells being mainly fusiform and frequently quite long; oval and round cells are also numerous. The nuclei are vesicular, and vary from long, narrow forms, almost identical with unstriped muscle nuclei, to those of an oval or circular shape; many giant cells with multiple nuclei in the centre, as well as many large, irregular, deeply staining nuclei, are present; karyokinesis is frequently seen, a few examples of tripolar division being noticed. Traversing the sarcomatous tissue are bands of muscular and fibrous tissue, the condition closely resembling that found in fibromyomata. The border line between the neoplasm and these areas of tissue, as well as the advancing edge of the sarcoma where it meets the normal muscularis of the uterine wall, are fairly sharp and distinct, although there is no encapsulation.

The arrangement of the spindle cells of the sarcomatous tissue in interlacing bundles and whorls of parallel cells is strongly suggestive of a myomatous structure. In some fields the appearance is almost typically myomatous, the nuclei, however, being slightly plumper than usual. Close to such areas, sometimes in the adjoining field, may be found typical sarcoma tissue, showing numerous giant cells, irregular nuclei

with excess of chromatin, and karyokinetic figures. The transition from the one type into the other is gradual and imperceptible, but it is possible to trace the change from unstriped muscle to typical sarcoma cells. The same change can be seen at the advancing margin of the growth, although the border line between the two tissues is rather abrupt. The muscle-cells can be seen to become larger; the typical long, narrow nuclei show an increase of chromatin granules and division by mitosis; the nuclei become plumper and more vesicular, but frequently retain their elongated form, all intermediate stages being seen. The connective-tissue elements also participate; they increase in number along the growing edge, where they can be readily differentiated from the muscle cells. In this situation they frequently show karyokinetic figures. Further away from the margin the distinction between cells of muscular and those of connective-tissue origin is lost.

The vessels are numerous; they usually have normal walls. Slight cellular infiltration with polymorphonuclear neutrophils, lymphocytes, and eosinophiles is found in the sarcoma tissue itself, in the muscularis of the uterine wall at the advancing edge of the tumor, and in the connective-tissue bands disposed throughout the sarcoma tissue.

The deeper portions of the tumor show more or less complete degeneration and necrosis.

It is apparent that in this instance there has been sarcomatous transformation of a pre-existing myofibroma. The mucosa is nowhere found to be implicated; the transition from muscle cells to sarcomatous elements can be readily traced, although the connective-tissue elements also participate. The striking resemblance of many areas of the sarcoma to a fibromyomatous structure, and the gradual change from such areas to typical sarcoma tissue, sustains this view. The fact that there is a purely fibromyomatous nodule in the same uterus is also suggestive, although it is evident that sarcoma and fibromyoma may exist in the same case, independently of each other.

On microscopical examination the small tumor on the posterior surface of the uterus proves to be a fibromyoma. The muscle tissue predominates, and in places slight myxomatous degeneration can be seen. Numerous *Mastzellen* are present, and slight cellular infiltration with lymphocytes and plasma cells occurs in some areas.

The uterine mucosa is very thin, and a slight interstitial endometritis is indicated by the infiltration with lymphocytes and eosinophiles.

The tubes and ovaries show congestion of the vessels, caused, no doubt, by traumatism at the operation; they are otherwise normal.

CASE II. *Myosarcoma Uteri developing from a fibromyoma of the uterus through sarcomatous transformation of the connective-tissue elements; multiple fibromyomata showing calcification and hyaline degeneration.*—M. N., æt. 43, married, admitted to the gynecological service of Lakeside Hospital October 9, 1900, gave the following history: For the past ten years she has been aware of the presence of an abdominal tumor, which has slowly increased in size, but has caused little discomfort. The menses began at 12 years of age; they have always been regular, but quite profuse for the past twelve years, the usual duration being over a week, sometimes two weeks, while for one period of seven weeks she flowed continuously. For several years she has had dysmenorrhea, but for the past five years, with the exception of slight backache at these times, the menses have been unaccompanied by pain. The last period occurred two weeks before admission. For the past two years she has had backache, aggravated by any overexertion. Six years ago she had an attack of "inflammation" in the left lower abdomen, which confined her to bed for three weeks; a similar attack occurred two weeks ago and lasted for one week, the right side being implicated. There has been no leucorrhea. The patient has never been pregnant. The family history is unimportant; the patient's general health is good; her weight is 105 pounds.

Upon examination the abdomen was found irregularly distended by a nodular mass reaching from the symphysis to the costal angle, the right side being more distended than the left. Above and to the right of the umbilicus could be seen and palpated a large mass which displaces the liver somewhat upward. On vaginal examination the uterus was found low down in the pelvis and surrounded by large, hard tumor masses. Physical examination of the heart and lungs showed nothing abnormal. A diagnosis of multiple fibromyomata uteri was made.

On October 11, 1900, supravaginal hysterо-salpingo-oöphorectomy was performed by Dr. Robb. An incision 42 centimetres (16½ inches) long was necessary for the delivery of the

tumor, which fortunately was only slightly adherent. The abdomen was closed without drainage, and perfect union was found to have occurred on the tenth day after operation, when the dressing was removed for the first time. The patient stood the operation remarkably well and made a rapid and uninterrupted convalescence. At present, four months after the operation, her health is excellent and she complains only of hot flushes.

The tumor mass is composed of multiple fibromyomata of the uterus, weighs 4,700 grammes (10½ pounds), and measures 28 centimetres from above downward, 19 centimetres transversely, and 15.5 centimetres in the antero-posterior diameter. The outer surface is extremely irregular in contour, but is free from adhesions, except at the lower posterior part. The ovaries are enlarged but normal; the tubes are normal but elongated, the right being 13½ centimetres, the left 15 centimetres in length. The Wolffian ducts in both broad ligaments are distended, forming cystic masses about the size of a pigeon's egg.

On section the uterine cavity is found to be 10.5 centimetres in length and very irregular, owing to the projection into it of several of the myomata. At the fundus a degenerated hemorrhagic polyp is seen; the mucosa is thin.

The myomata are very numerous and vary widely in size and appearance. The largest, 10 centimetres in diameter, is calcified around the periphery, while the centre is softened and presents small areas of liquefaction. Two other tumors, 9 and 7 centimetres in diameter respectively, present the characteristic appearance of fibromyomata. Several of smaller size show slight calcification. Another tumor, 8 centimetres in diameter, of soft, semi-fluctuant consistence and yellowish color, is mottled with small areas of interstitial hemorrhage. Around the greater part of its circumference it is sharply defined from the surrounding tissues, but internally it is continuous with the degenerated polypoid mass projecting into the uterine cavity.

Microscopically, that portion of the tumor which is soft in consistence, yellowish in color, and in certain areas hemorrhagic, proves to be sarcomatous and very similar in appearance to that described in Case 1. The cells are round or short, spindle-shaped, with oval, vesicular nuclei. Karyokinetic figures and large, irregular nuclear forms with excess of chromatin are numerous; giant cells with multiple central

nuclei are frequently seen; the margin of the growth is pretty sharply defined, and extension along the large veins can be seen. Slight cellular infiltration with lymphocytes and eosinophiles occurs in some areas of the sarcoma tissue and along the advancing edge. Vessels are numerous and frequently show a normal or hyaline wall; others represent mere channels between the neoplastic cells and do not show an endothelial lining. The deeper parts of the tissue show more or less extensive degeneration and necrosis, this condition being marked in the polypoid extension into the uterine cavity.

The margin of the growth is usually sharply defined and in places seems almost encapsulated. The transformation of connective-tissue elements into sarcoma cells can be seen, but nothing suggestive of a similar change in the muscle cells is found. The sarcomatous polyp in the uterine cavity is relatively small, by far the greater part of the sarcomatous tissue lying far out in the uterine wall among the myomatous tumors. It is probable that this polypoid formation was secondary to the sarcomatous transformation of an interstitial myoma, although in such cases we are frequently compelled to form an opinion from presumptive evidence, since absolute proof is wanting, just as in the cases in which the previous existence of a fibroid is to be assumed when complete sarcomatous transformation has occurred. Again, it is not always easy to assign the major rôle in such transformation to one type of cell, since the participation of tissue elements at the margin may represent merely a sort of sarcomatous "infection" of the surrounding tissues, and does not necessarily mean that the particular variety of cell undergoing change has been responsible for the formation of the growth. That the "sarcomatous infection" may occur is shown by Gerhard¹ and by Pick.² In support of this view Pick cites Hegar's "submucous" sarcoma of the uterus causing sarcomatous change of the neighboring muscularis, and similar changes in the uterine muscularis occurring in Beissheim's spindle-cell sarcoma of the mucosa, in Pestalozza's two cases, and in Klein's single case of decidual cell sarcoma uteri.

Sections from the various myomatous nodules show the usual appearances of fibromyomata, more or less extensive hyaline degeneration, or scattered areas of calcification.

¹ Gerhard: *Path. Anat. der weib. Sexualorgane*. Berlin, 1898.

² Pick: *Histogenesis and Classification der Gebärmutter-sarcome*. *Archiv. f. Gynäkologie*, Bd. xlviii.

The endometrium is thin and a slight interstitial endometritis can be made out. The ovaries are normal, showing nothing beyond the senile change consistent with the age of the patient. The tubes are also normal.

CASE III. *Smooth-muscle-celled Sarcoma of the Uterus due to the transformation of muscle and connective-tissue cells of the uterine wall, without the previous occurrence of a fibromyoma.*—A. L., æt. 38, single, was admitted to the gynecological service of Lakeside Hospital September 28, 1900, giving the following history: She has had the usual diseases of childhood, and at the age of 15 a suppurative cervical adenitis, the scars of which are still visible; otherwise she has always been well and strong until seven months ago, when she overstrained herself, and has had backache and pain in the lower abdomen ever since. The family history is unimportant; the patient has never been pregnant.

Three months ago she consulted a physician, who told her she had a uterine displacement, which, she says, he attempted to rectify by means of an instrument passed into the uterus. The manipulation caused intense pain and hemorrhage, both of which have continued without cessation ever since. For the last three months the periods have also been very profuse and painful, whereas formerly they were moderate in amount and free from pain. Her condition has been growing steadily worse; the pain in the abdomen is severe and extends down the thighs. Micturition is frequent and burning; she is very constipated, and defecation is painful. There has been no leucorrhea.

The urine showed a slight trace of albumin and a few pus-cells. The blood count showed 4,600 leucocytes.

Physical examination of the heart, lungs, and other organs showed nothing abnormal, except for the presence of a rounded, very sensitive tumor mass in the median line of the lower abdomen, about the size of a uterus of a four-months pregnancy. On vaginal examination the cervix was found to be small and patulous; it projected into the vagina, like a nipple, from the rounded uterine body; the lateral structures could not be palpated. A diagnosis of fibromyoma uteri was made.

On October 2 Dr. Hunter Robb performed a supravaginal hysterio-salpingo-oöphorectomy; the vermiform appendix was also removed on account of adhesions. The uterus was very soft and friable, tearing easily when seized with the volsella.

forceps. The friability was thought to be due to the degeneration of the rounded mass found in the posterior uterine wall. The abdominal wound was closed in layers, and primary union was found to have taken place when the dressings were removed ten days later. Convalescence was delayed by a right-sided pleurisy, and a slight broncho-pneumonia at the bases of both lungs, which developed soon after operation. Eleven hundred cubic centimetres of fluid were aspirated from the right pleural cavity. Careful search for tubercle bacilli both in this fluid and in the sputum was negative. Cultures from the aspirated fluid remained sterile, and animal inoculations have so far been without result. After this aspiration the patient's condition improved somewhat, so that she was able to get out of bed and walk around the ward; but in a short time the cough became worse, and dyspnea developed; the râles extended throughout both lungs, although no dulness developed nor was there any reaccumulation of pleuritic fluid. Pleuritic friction rubs persisted upon both sides, cachexia rapidly developed, and death ensued after she had returned home, eighty days after operation. Autopsy revealed the existence of numerous metastatic nodules in both lungs, and extension from the primary focus into the cervical stump and the bladder.

The body of the uterus is symmetrically enlarged and measures $9.5 \times 9.5 \times 9$ centimetres in its three diameters. The surface is smooth, free from adhesions, and shows numerous dilated superficial vessels; the consistence is quite soft. The tubes and ovaries appear normal. The weight of the uterus with the tubes and ovaries is 450 grammes. The appendix, 9 centimetres in length, also seems normal.

Upon section of the uterus, the whole of it, with the exception of a thin investing shell of apparently normal muscularis, is found to be transformed into a yellowish-white tissue showing small areas of interstitial hemorrhage; the consistence is quite soft; the greatest thickening exists in the anterior wall, where a thickness of 6 centimetres is reached. In this situation the central part is pultaceous; it has broken down and communicates with the uterine cavity through a ragged fistulous opening. A similar thickening, measuring 4 centimetres, is found in the lower part of the posterior wall.

The surrounding muscularis is sharply defined from the tumor tissue and is thickest at the fundus. Macroscopically, the new growth does not extend down to the level of the am-

putation. The uterine cavity, 10 centimetres in length, is surrounded by the softened tumor, but the mucosa does not appear to be implicated and is quite thin and pale in color.

Microscopically, the tumor masses prove to be sarcomatous. The cells are closely crowded together; they are both round and spindle-shaped, with large vesicular nuclei. Karyokinetic figures are very numerous, a great many tripolar forms being seen, an indication of rapid proliferation. Irregular nuclear forms, often of large size and showing an excess of chromatin, and giant cells with multiple central nuclei, frequently occur.

The transformation of the muscle cells of the uterine wall into sarcoma cells can be plainly traced at the margin of the growth; connective-tissue cells are also undergoing a similar change, but in less numbers than the muscle cells.

The line of demarcation between the sarcoma tissue and the muscularis of the uterine wall is sharp and distinct. The neoplasm can be seen in some places advancing along the large venous sinuses; toward the centre of the tumor, areas of more or less complete degeneration and necrosis occur. Cellular infiltration with polymorphonuclear neutrophiles, lymphocytes, and eosinophiles is found both among the sarcoma cells and also in the uterine wall in front of the advancing neoplasm.

The vessels are numerous, sometimes showing a normal structure and accompanying septa of connective tissue, but frequently representing mere channels between the sarcoma cells and failing to show endothelium.

The endometrium is very thin; the glands are very few in number, and a slight interstitial endometritis is found, there being some cellular infiltration with lymphocytes, polymorphonuclear neutrophiles, and eosinophiles.

The right ovary shows a small sarcomatous metastasis within a vessel, while in the left tube a metastasis is found in the folds of the mucosa. Otherwise the tubes and ovaries appear normal. The appendix is normal. The lung metastases show the same histological structure described in the uterine tumor.

Thus, of these three cases of sarcoma, in the first two the malignant growths appear to have arisen from pre-existing fibromyomata. In Case 1 there has been a transformation of both muscular and connective-tissue elements—*myofibroma sarcomatodes*. In Case 2 the connective-tissue cells alone

seem to be implicated—*myosarcoma*. The third case, which shows the most rapid growth and the most malignant characteristics, seems to mainly represent a sarcomatous change affecting the muscle cells of the uterine wall, the connective-tissue cells participating in a less degree—*smooth-muscle-celled sarcoma*.

Case 3 is to be distinguished from the first two cases, as well as from the cases of Orth and Langerhans, in which fibromyomata and pure myomata of the uterus gave rise to widespread metastases. In Orth's¹ case there was a primary interparietal "pure fibromyoma" of the uterus, with metastases of similar structure—fibromyoma or pure myoma—in the sternum, heart, eyes, stomach, small intestine, retroperitoneal lymph glands, kidneys, uterus, muscles, skin, bone, etc. Langerhans'² case was that of a woman, 60 years old, with a large subserous fibromyoma with calcified centre, and a large fungoid intrauterine tumor. In the recent portion of the first growth Langerhans found smooth-muscle fibres. The second tumor was composed entirely of smooth muscle, without connective tissue. The lungs contained large nodules composed entirely of smooth-muscle cells. This condition is probably best classified as *myoma levicellulare malignum*, a term proposed by Langerhans and accepted by Pick. Pick also suggests the name of *myoma sarcomatodes* (*sarcomähnliches Myoma*) for these tumors. To all intents and purposes they were sarcomata.

Our Case 3 is unique among uterine sarcomata in that it is derived almost entirely from the smooth-muscle tissue of the uterine wall, rather than from that of a myofibroma.

In all three cases the histological appearances are very similar. Karyokinesis, which is very common in Case 3, is less marked in the other two. All three showed giant-cell formation and the presence of numerous large, irregular nuclear forms with excess of chromatin.

For the privilege of reporting these cases I am indebted to Dr. Hunter Robb, whom I had the pleasure of assisting in these three operations. I also wish to thank Dr. W. T. Howard, Jr., for kindly advice and help in regard to the pathological aspect of the cases.

¹ Orth: *Lehrb. d. spec. pathol. Anat.*, Bd. ii., S. 489.

² Langerhans: *Berl. klin. Wochenschr.*, 1898, No. 14.

REPORT OF TWO ADDITIONAL CASES OF RUPTURE OF THE
SYMPHYSIS PUBIS DURING LABOR.

BY

JOSEPH B. DE LEE, M.D.,

Professor of Obstetrics, Northwestern University Medical School; Attending Obstetrician
to Mercy, Wesley, and Provident Hospitals; and Chief Obstetrician to the
Chicago Lying-in Hospital.

IN the September number of THE AMERICAN JOURNAL OF OBSTETRICS for 1898 the writer reported two cases of rupture of the symphysis pubis and expressed the opinion that these cases are far more common than is generally considered, running their course under a different name and terminating unrecognized, or are purposely withheld from publication.

Since writing the paper two additional cases have come under my care, and various conversations on the subject which the paper elicited discovered several others unpublished but having occurred in this city. The writer is therefore confirmed in his opinion that the accident is not at all rare; that, therefore, it should be in the mind of the obstetric attendant during labor, but especially during operative deliveries; and that a search for it should form a part of the routine examination after forced delivery.

CASE I.—Referred to at the close of the article previously mentioned. Mrs. D., age 36. Had a difficult instrumental delivery twelve years ago, from which time she has been an invalid. Since then, also, has had two difficult operative deliveries, stillbirth each time. Her gait is laborious and waddling, and there is marked sinking and rising of the hips. The pubic bones move very freely up and down upon one another to the extent of one and one-quarter inches. The pelvic measurements are: crests, 28 centimetres; spines, 24 centimetres; bitrochanteric, $31\frac{1}{2}$ centimetres; Baudelocque, $18\frac{1}{2}$ centimetres; conjugata diagonalis, 11 centimetres; conjugata vera (estimated), $9\frac{1}{2}$ centimetres.

The pelvis is fairly roomy inside, but this is due entirely to a wide separation of the pubic bones. The ends of the pubes are thin, separated two inches, the space being spanned by a thin, tough membrane about one inch broad. Innominates

move freely on the sacrum and without pain. Slight cystocele and rectocele, but no particular relaxation of the pelvic floor. Considering that nearly all the anterior supports of the soft parts are lost, there is remarkably little displacement. The visible mucous membranes are much congested, and the labia have numerous varicose veins. The mucous membrane over the tense, new-formed interpubic ligament is very tender.

Mrs. D. went into labor at 10:30 A.M. October 1, 1898, O. L. A. The delivery was normal, at 11:05 the evening of the same day. The child was a male, eight pounds, 46 centimetres long. Biparietal, $9\frac{1}{2}$ centimetres; bitemporal, 8 centimetres; suboccipito-bregmatic, 10 centimetres; occipito-frontal, $11\frac{1}{2}$ centimetres; occipito-mental, 12 centimetres; bisacromial, $10\frac{1}{2}$ centimetres; bisiliac, $10\frac{1}{2}$ centimetres. Circumferences: suboccipito-bregmatic, 30 centimetres; occipito-frontal, 31 centimetres; bisacromial, 37 centimetres; chest, 34 centimetres. The child had a double harelip and a cleft palate. This was operated upon later several times, but the infant died of inanition. The puerperium was normal, and the patient got up as usual, but presented the same symptoms as before labor.

CASE II.—Mrs. M., age 36. A large, strong woman, with a well-developed panniculus. Ten days beyond term. Had been in labor twelve hours. Attending physician applied forceps, but noticed no progress, even under strong traction. During one of the attempts a peculiar sensation was experienced, as if the forceps had slipped, but there was no advance of the instrument or of the head. During this operation, or shortly after, the fetus died. On the arrival of the writer the following was the condition:

Patient exhausted. Pulse 112 and not very strong. Was lying with the legs everted and wide apart, as if paralyzed, and complained bitterly of pain referred to the pelvic region, particularly the pubes, pressure over which was intolerable. Uterus very large, tense, painful. Nothing was palpable. No heart tones audible, even after careful auscultation under favorable conditions. Vulva slightly swollen and bruised, with a small laceration. There was marked cystocele. Owing to the urgency of the case and the apparent robust build of the patient, external mensuration was not made. Preparations for craniotomy. Table. Chloroform. The anterior vaginal wall was found prolapsed, and a separation of the pubic bones of one and one-quarter inches was determined. The distance between the ends of the pubic joint could be in-

creased by abducting the thighs. Internal examination of the pelvis showed it to be moderately roomy. The promontory was not accessible because of the almost complete engagement of the head, which was firmly wedged into the pelvis. It was very hard. Perforation with the Naegele perforator, the brain emptied with a douche, and a large part of the cranial vault removed with the bone forceps. Even after this, extraction of the head was accomplished only with extreme difficulty. The shoulders met with obstruction at the inlet and would not come through even after double cleidotomy, so the sternum and several ribs were removed and the chest eviscerated. This reduction in the size of the chest did not allow the delivery of the shoulders, so one humerus was cut, after which the delivery was easy. During the delivery the pubes separated two inches in spite of firm pressure on the trochanters. The hemorrhage during the third stage came from an adherent placenta, which had to be separated from the fundus over the site of a small fibroid. Careful suture of the perineum. Hot uterine douche. The child weighed nine and one-half pounds without the brain, blood, meconium, and the thoracic viscera. It was so mutilated that no measurements of value were obtainable. The head was very much ossified, the body firm and resistant. The dystocia, in the opinion of the writer, was due to the excessive size and hardness of the child.

After the operation, which had lasted one and one-quarter hours, the patient was severely shocked. A few drops of gray sediment were obtained from the bladder by the catheter, but no blood. There were no signs of hemorrhage, either internal or external. There was no perforating injury of the genital tract. Reaction was never completely established. On the contrary, the prostration increased in spite of all means to prevent it. At no time were there any signs of peritonitis. The kidneys acted very little, although the patient received several quarts of saline solution hypodermatically. The temperature began to rise on the third day, and patient died on the fifth day.

3632 PRAIRIE AVENUE.

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POINTS OF SIMILARITY AND DISSIMILARITY OF CROUPOUS
PNEUMONIA AND PULMONARY TUBERCULOSIS IN
YOUNG CHILDREN.¹

BY

SAMUEL S. ADAMS, M.D.,
Washington, D. C.

(With eight charts.)

As one of the Founders, I have watched with great pride the success of this Society, and have seen it attain a standard worthy of emulation by larger organizations. It is, therefore, deeply gratifying to me to have the honor of being its President.

In presenting to you "Points of Similarity and Dissimilarity of Croupous Pneumonia and Pulmonary Tuberculosis in Young Children," I do not presume to instruct you in the differential diagnosis, my desire being simply to recount some interesting points in comparison.

In the light of modern science, croupous pneumonia and pulmonary tuberculosis may be defined as acute infectious diseases, each characterized by a local lesion in the lungs, and both conforming to the class of general infectious diseases, in most of which the local lesion constitutes the most distinctive factor. In the former the lesion is almost uniformly confined to the lung structure, but in the latter rarely are the tuberculous deposits so circumscribed, the rule being that tissue necrosis rapidly progresses in the lung while tubercles are also being deposited in adjacent and contiguous organs and structures.

¹ Address of the President of the Washington Obstetrical and Gynecological Society, delivered Friday evening, October 5, 1900.

Croupous pneumonia is more common and the type more pronounced in older children, but occurs more frequently in infants and young children than is generally supposed, and has annually increased in frequency since the appearance of grippe in 1890. This statement might be challenged and attributed to faulty observation if based upon one observer's experience; but the consensus of opinion warrants the statement of actual increase in this decade.

As to the frequency of tuberculosis in young children, the statistics of numerous clinicians preclude the possibility of reaching a definite percentage. Positive results, however, are significant as to the seat of the tuberculous process. In Holt's 119 personal cases, under 3 years, the lungs were affected in 99 per cent; and in 131 autopsies, chiefly upon children of over 3 years, in the Pendlebury Hospital, Manchester, England, the lungs were involved in 93 per cent. The statistics of the Children's Hospital, District of Columbia, would show the frequency of tuberculosis approximating the percentage of cases examined by Müller, of Munich, in which 40 per cent were tuberculous. On the other hand, the records of the Washington Hospital for Foundlings would give a percentage less than that of either the New York Infant Asylum (8 per cent) or the New York Babies' Hospital (14 per cent). The large number of cases in the first-named Washington institution is due to the admission of negroes, in whom it is the exception not to find tuberculosis at autopsy, whatever the immediate cause of death. Its infrequency in the Washington Hospital for Foundlings, when compared with similar institutions in other cities, may be attributed to racial and social influences. The infants admitted are almost entirely the offspring of American whites whose environment is superior to that of the pauper class of any other city. Observation in these two institutions alone would justify the statement that of those dying from tuberculous disease the lungs and bronchial lymph nodes were involved in 90 per cent; and in only a small number of those dying from pulmonary tuberculosis was non-involvement of neighboring organs noted.

Croupous pneumonia occurs in infants and children under 5 years less frequently than pulmonary tuberculosis. In the former the liability increases with age, particularly after the fifth year, while in the latter it decreases rapidly in later childhood.

Thorner reports the following case of congenital croupous pneumonia: The child died thirty-three hours after birth.

The left lower lobe was solidified and could not be expanded. The mother, at the time of his birth, showed the physical signs of resolving pneumonia. The sections from the lungs of the infant showed diplococci and streptococci in great numbers. The author regards this case as one of intrauterine infection. That this may take place from direct transmission of tuberculosis seems warranted by the cases reported by Birch-Hirschfeld, Lehmann, Bar and Rénon, and others. The first demonstrated in the organs of a fetus, whose mother was ill with general tuberculosis, that the liver contained tubercle bacilli. He inoculated animals from the spleen and kidney of this fetus, producing tuberculosis in them. Numerous other examples of uterine infection are found in children, born of tuberculous mothers, in whom the disease becomes manifest during the first month of life.

My experience accords with that of observers generally that croupous pneumonia affects a larger percentage of males. For this susceptibility of sex I can offer no explanation. The tubercle bacillus attacks both sexes with equal virulence.

In all but a very small proportion of cases of croupous pneumonia the previous history shows that the child has been in excellent health. In a few cases former attacks were noted. In contrast, predisposition plays an important rôle in pulmonary tuberculosis. Feeble constitution, environment, gastroenteric diseases, all tend to lessen the resisting power of the child to the invasion of the bacillus.

Croupous pneumonia is usually a primary disease, though instances of its occurrence during the course of some other infectious disease, such as measles, scarlet fever, pertussis, typhoid and malarial fever, are recorded. In a large number of cases pulmonary tuberculosis is the immediate sequel of some one of the infectious diseases. The latent tubercle requires only the stimulating effect of measles, whooping cough, influenza, or typhoid fever to kindle a fire which leads to active conflagration and rapid destruction.

Langgaard traced the transmission of croupous pneumonia in a series of cases, but I cannot confirm his observations unless I do so from one instance. A child with croupous pneumonia was placed in a bed in close proximity to one who had been in the hospital for some months. The latter suddenly developed the disease. The transmission of tuberculosis even to infants and to very young children is too well known to require comment.

Our knowledge of the bacteriology of croupous pneumonia

is derived from the researches of Moseny, Netter, Mennier, Durck, Darier, Grancher, and others, who demonstrated that a number of micro-organisms, either single or multiple, are met with in both the primary and secondary forms. In primary croupous, Friedländer's coccus or pneumobacillus, or Fränkel's capsulated coccus, are the predominating organisms, although the streptococcus or staphylococcus is occasionally found associated with them. Neumann concludes from his "Bacteriological Investigations Concerning the Etiology of Pneumonia in Children" that Fränkel's pneumococcus is the unvarying causative organism in croupous, but contends that it is also found in broncho-pneumonia. It is often difficult to find the organism in the latter disease, owing to its frequent association with the streptococcus aureus et albus, streptococcus pyogenes, proteus vulgaris, and bacillus pyocyaneus. Failure to find the pneumococcus is due to its attenuation and disappearance during the progress of the disease. The presence of this micro-organism is accepted as evidence of the existence of pneumonia, but its absence does not indicate that the disease is not present.

In the secondary pneumonias of measles, diphtheria, influenza, pertussis, tuberculosis, and other infectious diseases, the streptococcus, more rarely the pneumococcus, is met with. Bacteriology thus shows that acute broncho-pneumonia is in no sense a specific disease as produced by any special organism; on the contrary, croupous pneumonia is a specific disease and is associated almost invariably with the pneumococcus.

Taylor, in an article entitled "Pneumonia Crouposa a Frigore," contends that not all cases of croupous pneumonia are due to the presence of a specific cause, but that many are evidently due to the influence of cold and exposure, or to other diseases in the system. Illustrative cases of the latter class often complicate malarial intoxication, meningitis, and typhoid fever. Neither Fränkel's bacillus nor Friedländer's pneumococcus has been demonstrated in all cases of croupous pneumonia. He admits that many cases are due to a specific cause, but believes that some cases are due to meteorological changes.

The bacillus tuberculosis of Koch is now accepted as the cause of tuberculosis.

Owing to the difficulties encountered in obtaining the sputum of young children, the micro-organism has seldom been detected in either disease, but in older children the pneumococcus, either alone or associated with the streptococcus, has

almost invariably been found in my cases of croupous pneumonia, and the tubercle bacillus in pulmonary tuberculosis.

Leucocytosis is a transitory condition, and is usually manifest during the febrile stage of acute infectious diseases. In croupous pneumonia the number of leucocytes, principally the finely granular oxyphilic cells, is frequently doubled or trebled. The fact that leucocytosis does not occur in all cases is of importance, for when it is well marked the case usually runs a favorable course, but if there is leucopenia the prognosis is less favorable. Just before the crisis the leucocytosis reaches its height, and disappears shortly after the temperature falls to the normal. This is in marked contrast to the leucocytosis of scarlatina, which persists long after the signs of the disease have passed.

In tuberculosis the change in the blood principally consists in the diminished quantity of the hemoglobin of the corpuscles rather than a decrease in the number of the corpuscles themselves. Yet this is not always so. Lazarus-Barlow says: "When anemia occurs along with early tuberculosis of the lungs (especially if no fever is present), it is commonly of the chlorotic type and the number of leucocytes present is normal. But when anemia occurs in the later stages of pulmonary tuberculosis, the complications introduced by ulceration, sweating, fever, etc., are so great that it is almost impossible to make any general statement concerning the condition of the blood, and quite impossible to decide how far the blood change in any particular case depends upon the tuberculosis itself, how far it is due to disturbing intercurrent causes."

In croupous pneumonia the right lung is more frequently affected than the left, the lower lobes more often than the upper, and both lungs are involved in only a small percentage of cases; while in tuberculosis the tubercles are not confined to any particular area, but are scattered over the surface or distributed throughout both lungs.

Croupous pneumonia so seldom terminates fatally in the young that I have made only a few necropsies. In these the morbid changes were so characteristic of those found in the adult that a description of them is unnecessary. The opportunities for examining tuberculous lungs have been many. Here also the lesions found have been similar to those found in the tuberculous lung of the adult.

One of the most interesting features of croupous pneumonia is resolution, which is usually coincident with the rapid fall of

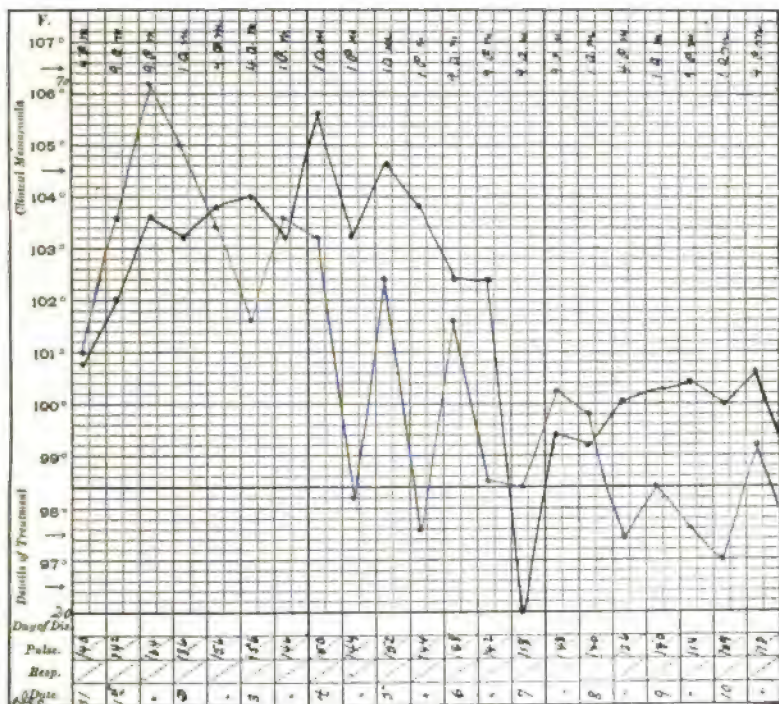
temperature, but may be delayed for several days after the normal is reached. In speaking of resolution Lazarus-Barlow says: "The pneumococcus leads to a very considerable hyperemia and exudation, and the exudation, in some manner with which we are not at present concerned, kills the micro-organism and neutralizes its poison. The primary irritant is, therefore, overcome, but the secondary irritant, represented in the main by the coagulated exudation, persists and of itself keeps up the inflammation until such time as it has become liquefied and has been removed by the lymphatics, by the blood vessels, and by expectoration. . . . Those cases of acute lobar pneumonia in which this maintenance of irritation is inordinately prolonged, owing to failure or delay in the liquefaction of coagulated exudation, are liable to terminate in abscess, gangrene, etc., of the lung—in other words, in them the sequels of the inflammation are not physiological but are pathological."

"Resolution of an inflammation is therefore synonymous with removal of the results of irritant action. In inflammation the blood vessels become dilated and the blood flow is retarded or accelerated according to circumstances; in resolution the blood vessels are contracted toward normal and the blood flow is accelerated or retarded according to circumstances. In inflammation exudation from the blood vessels is greater than the amount of fluid that drains away by the lymphatics; in resolution the amount of fluid that flows away by the lymphatics is greater than the amount of fluid that leaves the blood vessels. In inflammation cells leave the blood vessels and wander toward the focus of irritation; in resolution emigration ceases, and such leucocytes as are already at the focus of irritation wander away or are carried away in the lymph stream. In inflammation the sensibility and temperature of the part increase; in resolution they diminish again toward the normal. In inflammation tissue elements are disorganized or are destroyed; in resolution the dead tissue elements are removed, and those elements whose vitality has not been lowered to too great an extent recover."

No such rapid process of repair and removal of waste takes place in pulmonary tuberculosis. If the inflammation is stayed, the normal lung structure is replaced by caseous deposits, or the necrotic tissue is cast off, a cavity resulting. The usual process is rapid destruction of lung tissue, which is

chiefly due to the streptococcus and staphylococcus and not to the tubercle bacillus.

1. *Typical Course of Croupous Pneumonia.*—There may be no premonitory symptoms or only a slight indisposition in a child 3 or 4 years of age, but he may be taken with a chill,

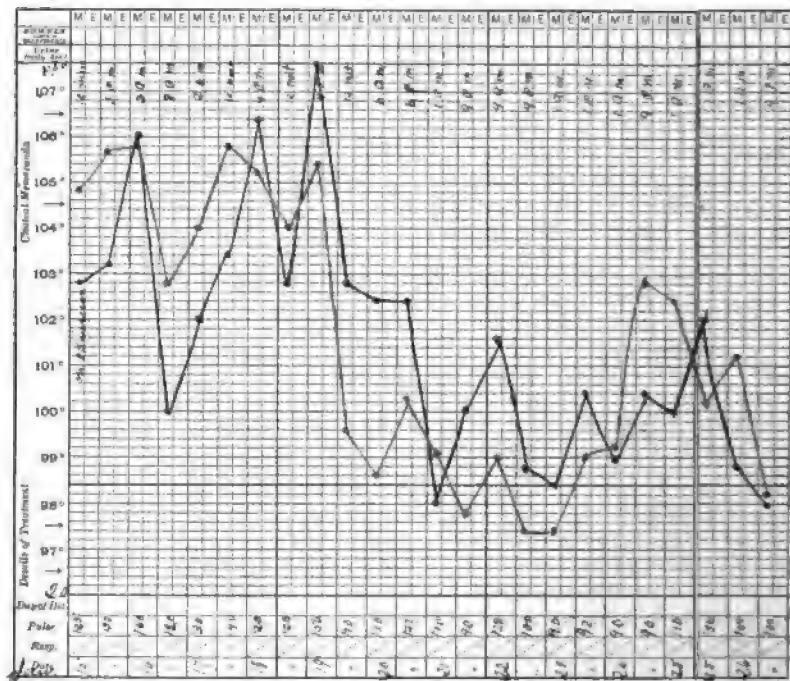


In all these charts the respirations are shown in black and the temperature in gray.

CASE III. Croupous Pneumonia followed by Measles.—Admitted December 31, 1898. C. J., male, colored, age 2 years. Was well until two days ago, when he was taken with nausea, vomiting, drowsiness, fever, "grunting" breathing, and cough, which have persisted. The symptoms on admission were stupor, rapid, labored breathing, with dilatation of alae nasi, and frequent, painful cough and expiratory grunt. Dulness, bronchial breathing, vocal fremitus, and bronchophony over left lower lobe posteriorly. At 9 P.M., his temperature being 106.2°, a warm bath was given, but was not well borne, and sponging and ice cap were used thereafter, which allayed the nervous symptoms. January 6: Temperature dropped to normal, and râles redux appeared. The patient made a rapid convalescence, and remained well until January 24, when the premonitory symptoms of measles developed, which were followed by the typical symptoms on the 28th, with convalescence February 21st. Duration of pneumonia, seven days.

convulsion, or vomiting, which is soon followed by a rapid rise of temperature. He is dull and sleepy, complains of pains

in different localities, and appears to be ill. Pain in the side may be occasionally noted. The symptoms which usually characterize a high temperature are present and continue until the crisis. He is *usually* restless, may be delirious; the high temperature persists and the respirations remain rapid. *Usually* on the fifth or seventh day the temperature suddenly

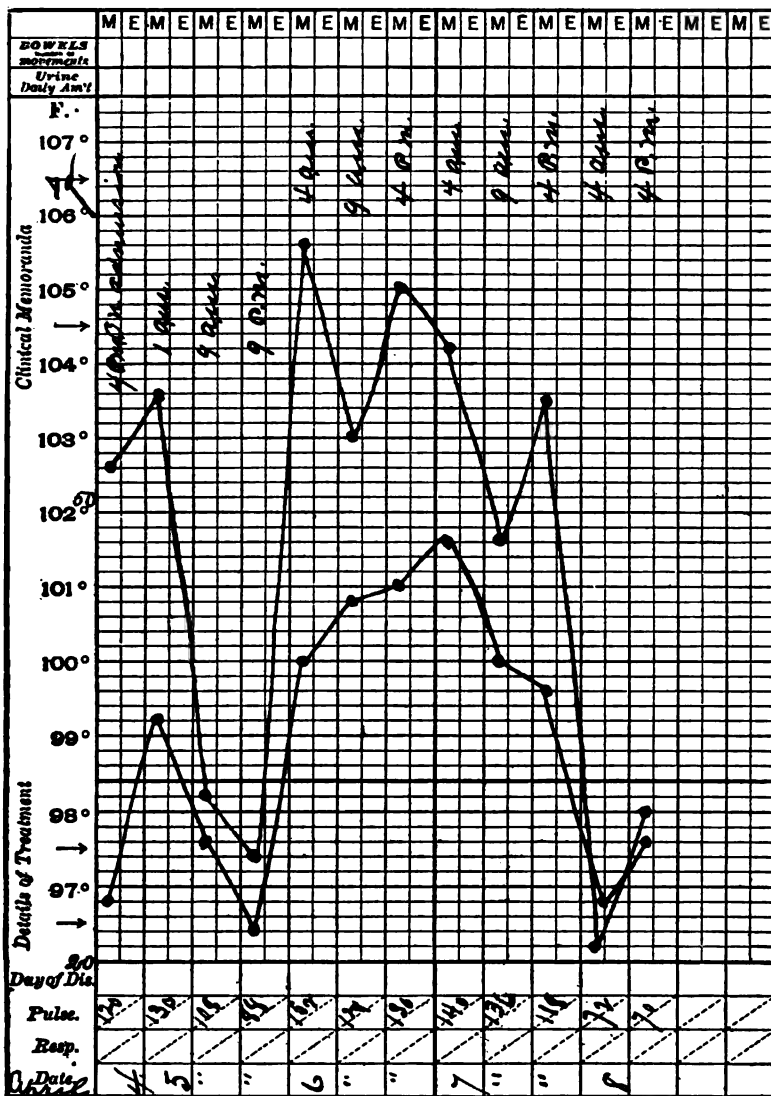


CASE IV. Croupous Pneumonia.—Admitted January 15, 1899. K. S., female, white, age 2 years. One week ago was taken with a croupy cough and high fever, most marked at night, when she would breathe very rapidly. Now in a semi-comatose condition and can be roused with difficulty; cheeks flushed; twitching of angles of mouth and extremities; respirations 70 per minute and jerky. Vocal fremitus, dullness, bronchial breathing, bronchophony over entire left lung posteriorly and at apex anteriorly. The temperature remained high, and the nervous symptoms were controlled by the ice cap and sponging until the 30th, when the disease terminated favorably by crisis. Duration, twelve days.

and rapidly falls to normal, when all the symptoms attributable to the high fever abate. The pulse rate is lowered and the respirations fall from 70 to 30 per minute. Convalescence now begins and is usually of short duration.

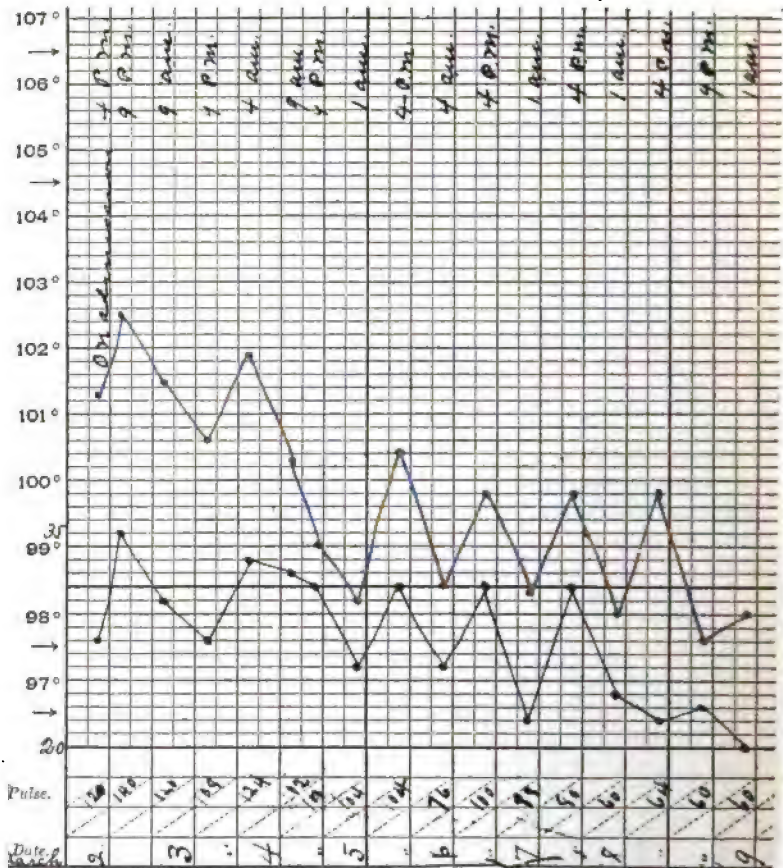
2. *Pneumonia of Short Duration.*—This form lasts but three or four days, although the characteristic physical signs

show that the changes in the lungs are identical with those in cases of longer duration.



CASE IX. *Croupous Pneumonia*.—Admitted April 4, 1900. M. W., white, male, age 5 years. Had two chills yesterday, one at noon, the other at 2 P.M. Now has jerky, irregular respirations. Increased vocal fremitus and exaggerated breathing over right lung; cog-wheel respiration, slight dulness, fine, dry râles, broncho-vesicular breathing, and slight bronchophony at angle of scapula, left side. Widal and malaria tests negative; marked leucocytosis. On the 5th dulness, bronchial breathing, bronchophony over lower lobe left lung. Termination by crisis April 8. Duration, five days.

3. *Abortive Type*.—This is the form which frequently gives rise to embarrassment. A boy, age 7 years, was suddenly taken with a chill on Thursday afternoon. Fever, thirst, pain in head and back, rapid breathing, quick pulse, and [ano-



CASE XV. *Croupous Pneumonia*.—Admitted March 2, 1900. S. P. colored, male, age 11 years, was taken February 28 with headache, pain in back and stomach, cough, and fever. Now has pain in left side, cough, and purulent expectoration. Sputum shows almost pure culture of pneumococci. Dulness, roughened breathing, almost bronchial, and moist râles in left upper lobe. March 4: Termination by lysis. Duration, nine days.

rexia marked the course on Friday. A careful physical examination of the chest was made several times on these days, but no signs of pneumonia were present. From the general symptoms I suspected pneumonia and so informed his parents. At noon on Saturday the surface temperature was 105.5° F.,

respirations 50, and pulse 140. The typical signs of consolidation at the left upper lobe were now present. At 6 P.M. pulse, respiration, and temperature were normal.

So many of this type are seen in private practice that one often doubts his own diagnosis. The virulence of the micro-organism may be modified in such cases either by the patient's resisting power or by the presence of another infecting organism in his system. I have thought in quite a number of my cases that the influenza bacillus produced an abortive influence.

4. *Protracted Course.*—It sometimes happens that the crisis does not come on the fifth or seventh day, but the pneumonia continues for ten days or two weeks. The explanation of this delay in resolution is to be found in the different areas involved, either in the same lobe or in several lobes. Two cases illustrating this delay have recently come under my observation. A boy, age 10 years, had a typical pneumonia involving the left upper lobe. There was a fall of temperature on the seventh day to 100° F. The same evening, however, the right lower lobe solidified, and in quick succession the entire right and the left lower lobes. The left upper lobe, which had cleared, finally became reinvolved. The pneumonia lasted for three weeks and the boy's temperature ranged above 102° most of the time, but he completely recovered. The second case was that of an infant of 13 months. The right upper lobe was first involved. The course was simple until the seventh day, when the temperature reached 106.4° F. owing to involvement of other lobes. For the next seven days the temperature was kept within safe limits by as many as fifteen baths daily until his complete recovery about the twentieth day. The prognosis in such cases is almost always unfavorable.

5. *Cerebral Type.*—Of this form little is to be said, as the cerebral symptoms in every case of pneumonia are probably the result of the high temperature and usually disappear when the hyperpyrexia is controlled.

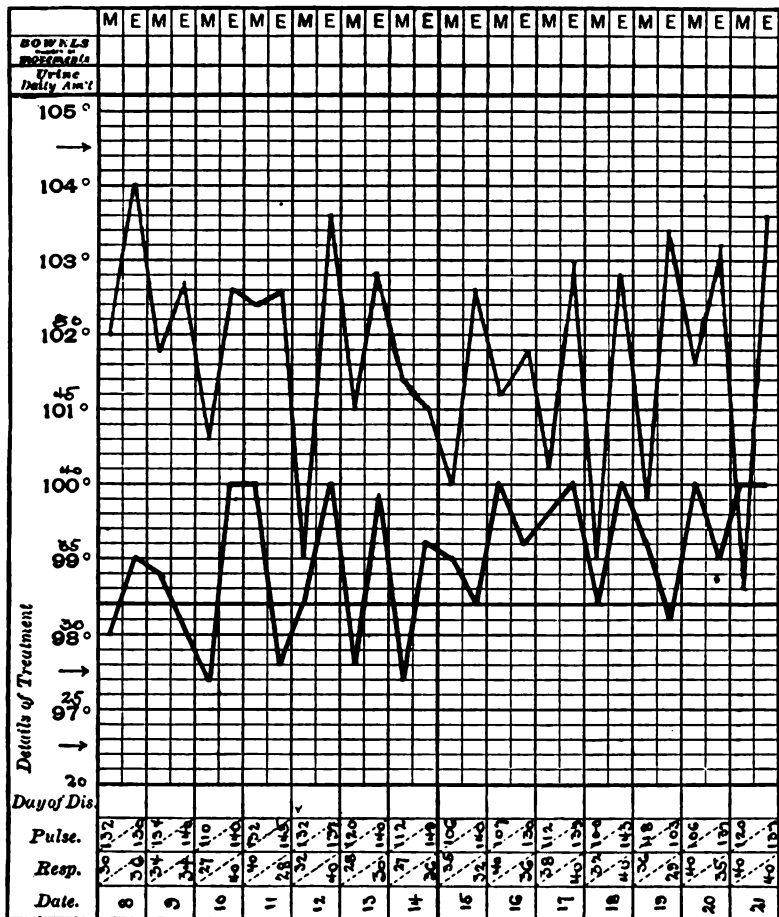
TYPES OF PULMONARY TUBERCULOSIS. 1. *Cases resembling Infantile Athrepsia.*—Owing to the similarity of incipient tuberculosis in general to several other diseases, a great deal of confusion in its symptomatology may occur. So also in the various types in which the tuberculous process is confined almost entirely to intrathoracic structures may a differential diagnosis be impossible before considerable destruc-

tion of lung tissue has taken place. In infants there are no characteristic symptoms. The paleness, loss of weight or continued daily failure to gain weight, languor, loss of appetite, and failure in strength are strongly suggestive of infantile athrepsia. Such cases are usually seen in infant asylums and may remain obscure until the necropsy reveals the deep-seated tuberculous process. Sometimes, however, the terminal stage of the disease is recognized by the irregular temperature, from 100.5° to 102.5° in the rectum, slight, dry, hacking cough, and breathing more frequent than is consistent with the character of the pulse and temperature. Physical signs point to scattered areas of broncho-pneumonia or bronchitis. One is also apt to be misled by evidences of disturbance in the gastro-enteric tract, such as occasional vomiting and greenish, watery, undigested stools. If such general symptoms should immediately succeed whooping cough, measles, or influenza, it is at least strong presumptive evidence of miliary tuberculosis, and the physical signs would determine its location in the lungs.

2. *Cases resembling one of the Continued Fevers.*—In older children there is usually a period of several weeks during which marked but indefinite symptoms occur to excite the anxiety of the parents. There is a gradual decline in health, marked by anemia, a change of disposition—a bright, vivacious child becoming sluggish and fretful—loss of appetite, and indigestion. Such cases are sometimes seen in the early school life and may be attributed to overtaking the child mentally and physically. He is now taken from school with the hope of improvement, but a daily rise of temperature now sets in and is suggestive of typhoid or malarial fever. There are no local symptoms to account for the fever, but examination of blood and urine may, by exclusion, strengthen the suspicion of tuberculosis. A positive diagnosis, however, can only be made after the disease has so far advanced in the lungs as to give the characteristic local signs and symptoms.

3. *Cases Running a Rapid Course.*—In such cases the occlusion or destruction of pulmonary tissue is so rapid and extensive as to suggest broncho-pneumonia, to which the symptoms are due rather than to the numerous miliary tubercles scattered in groups, with intervening areas of inflammation, throughout both lungs. The symptoms are cough, dyspnea, rapid respiration, fever, and prostration. The range of temperature is not

vary from one to six months. If the general tuberculous condition precedes the localization in the lungs, cough, rapid breathing, loss of weight, prostration, etc., develop slowly. When the pulmonary symptoms develop first, they resemble

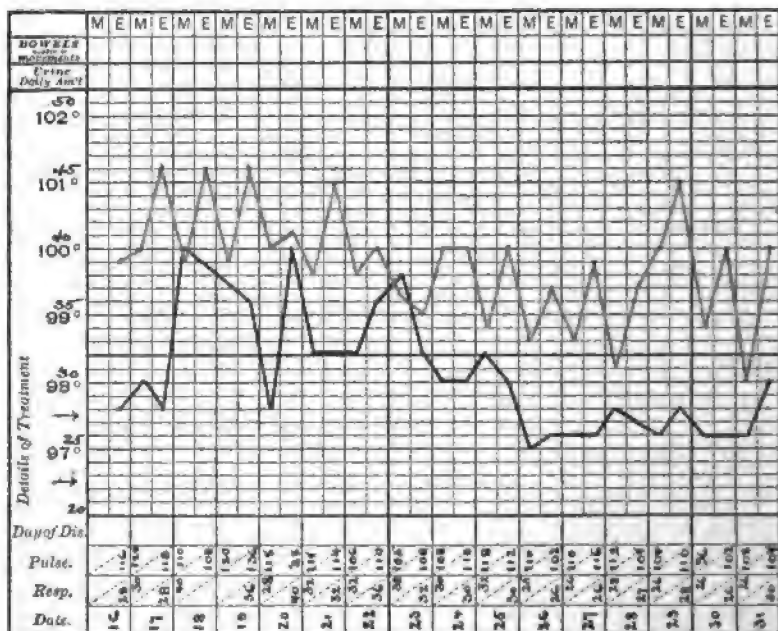


CASE D. *Pulmonary Tuberculosis*.—Carrie T., 4 years, admitted January 24, 1900. Family history not important. Child was considered healthy until two weeks ago, when she was taken with headache, lassitude, loss of appetite, pain in abdomen, and an intermittent fever. Dulness at right apex, diminished resonance at left. Loud bronchial breathing at apices, more marked posteriorly, with broncho-vesicular breathing over entire right lung. She grew worse until April 1, when she was taken from the hospital in a precarious condition.

those of broncho-pneumonia. When it occurs as a sequel of measles, whooping cough, or influenza which has been complicated by broncho-pneumonia, the early symptoms may be

marked. The general local symptoms abate, but the cough continues. In a few weeks the child becomes worse, the cough increases, the temperature rises to 103° or 104° , and well-marked physical signs are detected. Fever, though not high, is always present in children.

5. *Chronic Form*.—This is usually the result of one of the acute forms, which results in a chronic interstitial pneumonia



CASE E. *Pulmonary Tuberculosis*.—Roy S., 6 years, admitted January 16, 1897. Family history no bearing on case. Boy always delicate. Whooping cough at 2 years, and cough at times since. Four months ago fell from a carriage, causing retraction of head and curvature of spine, for which he has worn a plaster jacket. Frequent asthmatic attacks and malaria, with chills for past week. Chest barrel-shaped, with protrusion of sternum. Dulness over left upper lobe. Moist and sibilant râles over both lungs anteriorly. Râles and harsh breathing posteriorly, especially over left scapula, where almost bronchial. Has frequent and severe paroxysmal coughing. A slight improvement was noted when removed by his parents, February 21, 1898.

with tuberculous caseous deposits. The child apparently recovers from an acute attack, but does not regain his health and spirits, showing a decline in health. A careful physical examination will give evidence of structural changes in the lungs. The course of this type may extend over two or three years. The physical signs are identical with those of broncho-pneumonia.

The most interesting comparison of the two diseases is to be found in the pulse-respiration-temperature ratio. In croupous pneumonia this is always far above the normal, while in pulmonary tuberculosis the temperature may be high and the pulse rapid, yet the number of respirations is nearly normal. The respiration in the former is rapid, jerky, and accompanied by a characteristic expiratory moan or grunt. In the latter it is slow and feeble and has no special significance.

In attempting to explain the frequency of respiration in croupous pneumonia, which is usually out of proportion to the amount of lung involved, Lazarus-Barlow says that in croupous pneumonia a considerable proportion of the total lung area—one or more lobes—is quickly converted into a solid mass and becomes useless so far as oxygenation of blood is concerned. The unimpaired lung becomes hyperdistended and the rate of respiration is increased out of proportion to the increased rate of heart beat. The respirations are shallow, but they may number thirty, forty, fifty, sixty, or more in the minute; and where both lungs are affected the respirations may be more frequent than the heart beats. To say that increased frequency of respiration is compensatory is not a satisfactory explanation. A striking phenomenon of the disease is that the pulse-respiration ratio returns to the normal coincidentally with the rapid fall of temperature to normal, although the amount of consolidated lung tissue remains the same as before the crisis.

The temperature doubtless hastens the respirations, but this does not explain it. There may be extensive consolidation of lung in pulmonary tuberculosis, accompanied by unusual hyperpyrexia, but the pulse-respiration ratio is not affected as it is in pneumonia. Assuredly there must be some other factor or factors entering into the process. Among these the suddenness and rapidity with which the lung is consolidated must be considered a causative element. In pleural effusion the rate of respiration is more readily quickened by a rapid exudation, though the quantity be small, than it is by a gradual one of a much larger quantity. Tuberculosis requires as many weeks to produce a given amount of pulmonary consolidation as croupous pneumonia does hours, hence it would seem reasonable that the respiration should be different in the two diseases and that it should be much more rapid in the latter.

The cases (A, B, D, E, pages 645 to 648), with charts, of pulmonary tuberculosis are introduced to show the disparity in

the respiration-temperature ratio as compared with that in croupous pneumonia.

In the latter, as will be seen by the charts, the respirations per minute seldom fall below fifty, the curve frequently reaching above the temperature curve. In the cases of tuberculosis, which are typical, representing the disease in its various stages, a uniformly high temperature is accompanied by slow respiration.

Pulse.—The quality of the pulse is of much greater importance than its frequency. While it is rapid, full, and strong at first, it may become small, weak, and compressible later, in either disease.

Temperature.—An elevation of temperature in the child indicates, as a rule, some pathologic condition. This cannot always be detected, even by the most expert diagnostician, at first sight, but requires careful observation in a large majority of cases. From our knowledge of children we understand that the slightest disturbance may produce a very marked rise of temperature, and this leads us to conclude that a great deal depends upon the individual susceptibility of the child to one of the few causes which are responsible for this. To illustrate: A child, from indiscretion in diet, may develop a temperature of 105° or 106° F. We know from experience that a temperature of this kind cannot be maintained with safety for any length of time, but, fortunately for the child, Nature is of such generous disposition that usually, by a diarrheal process or by the rejection of food or of offending material, the temperature soon subsides. Sometimes the most violent and fatal disorders of childhood are accompanied by a low range of temperature. This is the case, for example, in the first stage of pulmonary tuberculosis. If, therefore, we depend upon the temperature alone we shall go astray, since it is not an index of the severity of the disease. Thus, the pendulum swings both ways. In some cases we have it swinging so that the temperature is a direct indication of the severity of the disease, while in other instances it may swing in the opposite direction and give no idea of the gravity of the disorder.

In children the temperature is subject to sudden and violent rises more frequently than in the adult. In the latter there is some part of the mechanism which prevents these sudden fluctuations. In the child we have not only the primary rise in the afternoon, but not infrequently several maxima and

several minima in the twenty-four hours. This, of course, in very many of the acute infectious diseases as well as in those under discussion, is of the most confusing character, and should always be borne in mind in estimating the value of this one symptom in connection with any pathologic condition.

We may have not only irregularity, but also remissions to a certain extent—a periodicity. We know there is some regulating influence which will control the periodicity, and we must, if possible, search diligently for any condition which might produce in the child a remission of the fever. An illustration is to be found in mixed infections. Not long since we were taught that no two infectious diseases could exist in an individual at the same time, and particularly in the case of the acute eruptive diseases of childhood. I was taught this and believed it, but this teaching has since been most emphatically contradicted by practical experience. I have met with not only double but treble infections. That is to say, during the course of a scarlet fever I have observed croupous pneumonia, and, following this, diphtheria which was clearly demonstrated to be such, both bacteriologically and clinically. We can have, therefore, during the course of an acute infectious disease, other diseases, and an unusual and sudden elevation of temperature is thus accounted for.

It does not make any difference, so long as we have a safe guide, how high the temperature is in any fever of childhood. By safe guide I refer to the consequence of high temperature. The mistake is constantly being made by general practitioners of placing too much dependence upon high temperature *per se*. An elevation of temperature without corresponding evidence of cerebral disturbance is of slight significance. For example, a child has croupous pneumonia or pulmonary tuberculosis. The temperature range is from 103° to 104° or 105° . The individual is getting sufficient air, the pulse is good, there are no mental disturbances, and the physical signs are well marked. Under such circumstances it is bad practice to attempt by any active measures to reduce the temperature simply because it reaches the degree of 105° . The reason for this statement is that we know croupous pneumonia to be a self-limited disease and that it ordinarily runs a definite course, which terminates by crisis; that pulmonary tuberculosis is subject to great fluctuations of temperature. Reasoning thus, the temperature should be let alone. On the contrary, suppose that the temperature is 105° , or only 102° , with mani-

fest injurious effects on the nerve centres. Here it would be bad practice not to interfere and relieve the brain, for a few hours at least, from the deleterious influence of the high temperature.

In the treatment of all acute infectious diseases this principle should be our guide: Rather use intelligence in interpreting the effects of high temperature than plunge the patient into a bath or resort to internal means of reducing temperature because the thermometer registers a high degree. Some children will bear a temperature of 103° or 104° without any cerebral manifestations, yet in the same family there may be other children who are thrown into a state of high nervous excitability, or even into convulsions, by a temperature of 101° or 102°. You must, therefore, determine the effect of high temperature upon the *individual* child rather than address your treatment to the thermometer.

Physical Signs.—The physical signs are identical with those observed in the adult. In a majority of cases these are distinct early in the course; in some, careful and frequent examinations fail to disclose them until the disease is far advanced.

Course and Termination.—Croupous pneumonia usually terminates in recovery, a small percentage of cases being fatal. Tuberculosis is uniformly fatal. In the former, resolution begins with the subsidence of the fever, and the lung becomes normal in a few days thereafter, or resolution may be delayed, but pyothorax is more frequent. Ballinger offers a reasonable explanation of the cause of death in croupous pneumonia. He believes the amount of exudation is not entirely dependent upon the extent of the local process, but is in increasing ratio to the general nutrition and the amount of blood in the body. In health the lungs contain from 7 to 9 per cent of the blood in the body, while a pneumonic lung contains from 30 to 40 per cent of the total blood weight. The exudate, therefore, has almost the same effect as rapidly recurring hemorrhages associated with fever and infection, for it is composed almost entirely of blood constituents. The symptoms of collapse and heart failure are due to oligemia. The heart which is already weakened by fever and overwork is insufficiently nourished. In the fatal cases death is caused by heart failure, in some in the early stage, but in most directly before or after the crisis.

Diagnosis.—Carrière thinks that because broncho-pneumonia is so much more frequent in early life the diagnosis of

croupous pneumonia is often overlooked. He says neither the mode of onset nor the physical signs suffice to make a differential diagnosis in the very young, but he relies upon the temperature curve as a certain means.

Jurgensen, on the other hand, concludes that every acute pulmonary affection which comes on suddenly, lasts seven days, and then suddenly ends may be regarded as lobar pneumonia.

A positive diagnosis cannot always be made in the early stage, but there should be no difficulty in differentiating croupous from broncho-pneumonia. Upon the appearance of the characteristic physical signs all doubts are dispelled. The diagnosis is often not made because of neglect to make frequent physical examinations. Many diseases resemble pneumonia in their onset and early course; but in all cases of severe sudden illness in children in which there are high fever, rapid breathing, and obscure symptoms, avoid a positive statement until pneumonia can be excluded.

The cases are introduced to show the course of croupous pneumonia between the ages of 9 months and 11 years.

The points of interest are:

1. The uniformly high temperature without marked cerebral perturbations.
2. The high rate of respiration, which in several instances was about 70 per minute.
4. The favorable termination by crisis from the fifth to the seventh day.
4. The rapid fall in respiration rate coincident with the sudden fall of temperature.
5. The high pulse rate after the crisis.
6. Mixed infection in several instances.
7. The treatment by hydrotherapy and stimulation.

Prognosis.—Although the symptoms are apparently grave, the death rate among children is very low, being higher in infants. The gravity of the initial symptoms cannot be regarded as a safe index of the course or termination. In some in which recovery was rapid and complete, the onset was marked by severe convulsions and alarming cerebral manifestations, while in others death came unexpectedly during a mild type. The mortality from this disease in the Children's Hospital during the past twenty-eight years was 15.1 per cent. One case was moribund when admitted and died before treatment was begun, and a second died from fracture of the skull,

the pneumonia being secondary. By excluding these cases the mortality would be reduced to 9.9 per cent. There have been 25 cases treated since January 1, 1897, all of which recovered.

The mortality from pulmonary tuberculosis would be nearly 100 per cent in institutions, were it not that many children are taken away by their parents when a fatal prognosis is pronounced.

Treatment.—In the treatment of croupous pneumonia absolute rest in bed is enjoined, and great discretion is to be exercised in disturbing the patient for physical examinations. Frequent examinations of the chest are to be avoided, thereby saving extra labor to the overworked heart. If the pneumonic area is mapped out at first, and there is no reason to believe the inflammation has extended, nothing is to be gained by overzealous investigations; on the contrary, change of posture for purposes of auscultation and percussion will frequently tax the patient's strength and may induce syncope.

The cotton jacket, with or without oiled silk, is worn throughout the attack, being removed shortly after the crisis. If there is acute pain and surface congestion, dry cups are applied over the inflamed area, followed by hot poultices.

A room well ventilated, well lighted, and kept at a temperature of 70° F. is essential.

The diet is restricted to milk or animal broths in suitable quantities, given every two hours during the day and every three hours at night. Cool water, given at frequent intervals, aids in the reduction of temperature and favors the elimination of toxic materials. Cracked ice is forbidden because it dries the secretions of the mouth.

In the administration of internal antipyretics great harm is very frequently done. It is true that by a good dose of antipyrin, acetanilid, or phenacetin we can reduce the temperature and make the child apparently better. The parents are satisfied, and we may think we have accomplished something; but what is the result? The action of internal antipyretics, especially of the coal-tar derivatives, is as transitory as it is sudden and violent. We are thus thrown upon one or the other horn of a serious dilemma. We must either allow the temperature to return to its former height and abide the consequences, or we must continue the use of these powerful drugs and take the chances not only of a confusion of diagnoses, but of the powerfully depressant, even paralyzant, effect

which they exert upon the heart. I do not mean to decry their judicious administration, but I do believe that antipyrin, in the hands of even the most skilful, is a most dangerous drug. I have seen its ill effects and its apparently good effects. I have seen a child wildly delirious from croupous pneumonia made rational by a dose of antipyrin, so that it could sit up in bed and chat with its parents; but I have seen the same child relapse into a condition of hyperpyrexia and die within twenty-four hours because the heart had never regained the tone which it had prior to the violent reduction of the temperature by antipyrin. My experience with antifebrin is similar. With phenacetin I have had rather more favorable results. Of the internal antipyretics it is one of the safest, but it should be given judiciously, and only in those cases in which we require a rapid reduction of the temperature to relieve an intensely irritated brain, when the bath is impracticable. Its administration should be accompanied by free stimulation. These antipyretics act in two ways—i.e., they lessen heat production and increase heat dissipation—and we must take this into consideration in determining the nature of the antipyretic to be given.

The second method of reducing temperature is by the external application of cold. This method is not only the most beneficial, but it is the most stimulating to the various systems. It may be done by means of the cold pack, by the application of the ice cap to the head or of the ice coil to the abdomen; but, far beyond the beneficial effects of the wet pack and these other methods, the application of the Brand method, modified as to temperature, is unquestionably the best means of reducing fever, no matter what pathological condition gives rise to it. I say this without any hesitancy. I have no compunction whatever in taking from his bed a child having croupous pneumonia or tuberculosis, with a high temperature and accompanying nervous excitement, and placing him in a bath under proper conditions, for I believe that I am not only reducing the temperature, but am securing a far better general systemic condition.

The Brand method must be carried out in every detail. It is not sufficient to take the little one to the bath room. The bath tub should be brought to the patient, and the latter should be gently lifted out of bed and placed in the tub, the manipulations being conducted during the bath and the necessary stimulants given. The result is that the reduction of the

temperature is effected with perfect safety. Quite commonly the temperature rises, after three or four hours, to its former height, when the bath may be repeated.

The temperature of the bath varies considerably in different cases. With a temperature of 105°, be very careful how you reduce the temperature of the bath below 95°, the books to the contrary notwithstanding. If you can accomplish what you desire by a warmer bath, and with less inconvenience and discomfort, why should you use a colder one? Some advise a bath at 70° or 80° F. I claim that just as good results follow the use of a bath having a temperature of 95° to 100°, provided a cold cloth is applied meanwhile to the head. The ordinary duration of the bath is ten minutes, and during this time the patient should be subjected to continuous friction.

The heart's action must be carefully watched and stimulation begun at the first sign of weakness. Ammonium carbonate and whiskey in alternating doses are pushed. Later, when danger is imminent and greater stimulation is imperative, nitroglycerin, strychnia, and camphor are used. When cyanosis becomes severe, hypodermatic injections of nitroglycerin, strychnia, and sometimes ether are administered. The marvellous effect of nitroglycerin on young children almost moribund has often been noted.

Inhalations of oxygen will relieve dyspnea, but I believe the relief is only temporary.

The so-called expectorant drugs and syrups are not given, with the exception of ammonium chloride, which is sometimes prescribed after the crisis if mucous râles persist.

In suitable weather, the patient's condition permitting, exercise in the open air for an hour or two daily will hasten recovery.

Finally, in the treatment of croupous pneumonia in children, especially in infants, one must never lose sight of the fact that it is a self-limited disease, and that the method of treatment which will insure the best results is that which meets indications only as they arise.

The same general rules are applicable in the treatment of pulmonary tuberculosis. In contrast to croupous pneumonia, it is seldom necessary to resort to either internal or external antipyretics for the reduction of temperature, since even in severe cases of hyperpyrexia the temperature remains high but a short time before the remission.

CYCLIC VOMITING.¹

BY

GEORGE N. ACKER, M.D.,
Washington, D. C.

THIS disease has been described under various names, such as recurrent vomiting, persistent vomiting, and gastric neurosis. Some hold that it is closely allied to migraine. The leading feature is the tendency to recur at irregular intervals without any apparent exciting cause; and during the attack, which lasts a variable period, it is impossible for the patient to retain anything in the stomach.

At present there is little to be said about the pathology of the disease, and the etiology is also still under discussion. There can be no doubt that the stomach is not at fault primarily and that the trouble must be assigned to some general cause. Dr. F. Forchheimer, in a discussion on this subject,² held that there was a faulty action of the liver due to improper diet. The filtering function of the liver had been interfered with, as Brush had shown in the changes that take place in the livers of artificially-fed calves, and as a result certain intermediate substances between albumen and peptones were formed and caused irritation of the centres. There was an attempt on the part of the stomach to eliminate these toxic products. According to Rotch, undue exposure to cold, fright, and excitement appears to have sometimes an etiological influence on the disease, and it is perhaps connected with the great sympathetic ganglia, such as the solar plexus. He had one case where the attack was brought on by a blow on the epigastrium. This caused the first attack in my patient. Age and general condition do not appear to influence the disease, but it is found more frequently among females and in early life. Diet and the state of the bowels have nothing to do with the attack. In many cases it has a nervous origin and the children give a nervous personal and family history.

¹ Read before the Washington Obstetrical and Gynecological Society, June 15, 1900.

² Transactions American Pediatric Society, vol. v., 1893.

The attack, as a rule, comes on suddenly. The most constant symptom is the uncontrollable vomiting and great thirst. In many cases there is pain in the epigastric region. Vomiting is independent of anything taken into the stomach. The vomited material may be clear, but often contains bile and mucus and, if the attack is violent, some blood. The patient becomes very much exhausted by the second day, and about the fifth day is able to retain something in the stomach and makes a rapid convalescence. The temperature is not high and the pulse is good, except during the days that the patient is exhausted. In some cases there is constipation with light gray stools. The vomitus contains free hydrochloric acid, and during the attack the uric acid in the urine is diminished. The first attack is difficult at the beginning to diagnose from acute gastritis or acute indigestion. Meningitis is also suggested by the symptoms. The course of the disease will soon clear up the diagnosis. In my case nephritis and acute bronchitis had to be eliminated. The prognosis is favorable, but it becomes serious in very young children, who are liable to die from exhaustion. In the treatment everything should be withheld from the stomach for thirty-six or more hours. Ice in the mouth will diminish thirst somewhat, and the ice coil over the epigastric region I have found will relieve the pain and control the vomiting to a certain extent. Drugs by the mouth do not influence the vomiting, but chloral and the bromides administered by rectum often control the nerve centres. If seen early enough, calomel will have a beneficial action, but a good enema should be given to clear the bowels. It is a mooted point whether the attacks can be controlled by diet. Holt has had good results from a milk, meat, and bread diet. He allows fruits, not sweet, but restricts starches and prohibits sugars.

M. S., age 10 years, female, colored, first came under my observation at the Children's Hospital in February, 1899. Her father died about ten years ago from pneumonia following epidemic influenza. The mother and three other children are living and in good health. After a normal labor the child was breast-fed for six months and then put on condensed milk. Dentition began about the fourth month and progressed rapidly. She walked at 13 months and was never sick until November, 1898, when she was kicked in the umbilical region by a boy. Two weeks after being injured her appetite failed and she complained of pain about the umbilicus. Uncontrollable vomiting then began and lasted three

weeks, with great prostration. She was in good health from that time until she entered the hospital with the same symptoms. The urine in this attack was scanty, high-colored, and contained a large amount of albumin with many epithelial and hyaline casts. The temperature was not high. There were numerous râles in both lungs, and she expectorated a large amount of mucus between the vomiting spells. The attack lasted about five days, but she remained in the hospital some weeks.

May 15, 1899, she entered the hospital the second time. With the exception of being constipated for a week, she had been in good condition until May 14, when she complained of pain in the abdomen, headache, and nausea, and commenced to vomit.

Present Condition.—No emaciation. Child looks dull and sick, is restless and nervous, lies on back most of the time. There are numerous râles over both lungs, but no cough. Tongue slightly coated. She suffers very much from thirst, but vomits as soon as she takes water. The appetite is poor and bowels are constipated. Has persistent attacks of vomiting. The epigastric region is tender. No enlargement of liver or spleen. The pulse slow and full, heart sounds good; temperature 98.8° F. Child sleeps fairly well; cries and screams out at times and complains of intense frontal headache. Is sullen and refuses to talk. The urine is scanty and high-colored, but nothing abnormal is found on examination.

On the 21st inst. the nausea ceased and she was given small quantities of albumen water. On the 25th she was in a good condition. During the attack she vomited a large amount of acid material composed of mucus and gastric juice. She also expectorated a great deal of mucus. Ice held in the mouth relieved thirst, and nutritive enemata were given. Ice bag over the epigastric region quieted the pain. The child became very much exhausted on the 17th and stimulation was necessary. There was no rise of temperature.

October 17, 1899, she returned to the hospital for the third time. She had been feeling sick for two or three days, and commenced to vomit the day she came to the hospital. The bowels had been regular. The attack lasted until the 21st, when she took and retained albumen water, and on the 24th was given soft diet. The temperature ranged from 100° to 101° F. The general symptoms were similar to those of the other attacks.

November 19, 1899, she again entered the hospital with the

statement that after breakfast she had a tired feeling, with tightness about the abdomen, and at 3 P.M. vomiting, explosive in character, began and had persisted. There were numerous moist râles over both lungs, with profuse expectoration of a yellowish fluid. The temperature was elevated several degrees during this attack. There was a vaginal discharge which contained gonococci. On November 24 she commenced to retain nourishment.

April 10, 1900: Began to vomit on the 9th inst. without any apparent cause. The symptoms and treatment were the same in this as in all the other attacks. On the 14th she retained albumen water and on the 16th had light diet.

OVARIOTOMY IN THE EIGHTIETH YEAR.¹

BY

WILMER KRUSEN, M.D.,

Instructor in Gynecology, Jefferson Medical College, Philadelphia, Pa.

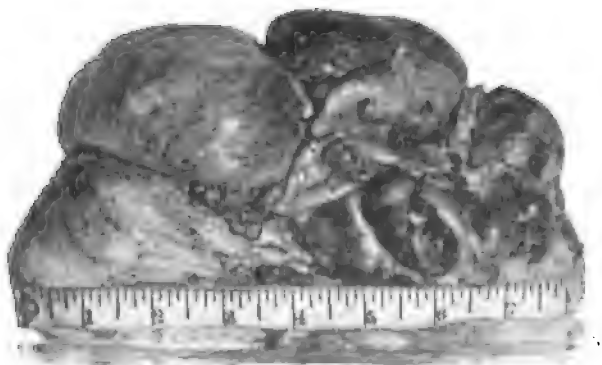
(With two illustrations.)

OPERATIONS upon patients at the extremes of life have sufficient interest and importance to warrant their publication, although there may be nothing exceptional or unusual about the procedure itself. In certain congenital malformations, such as an imperforate rectum, atresia ani, or occlusion of the urethra, the knife must be employed almost immediately after birth. On the other hand, necessity may demand that operations must be performed upon the aged for the prolongation or the saving of a nearly spent life; and very old persons often bear operations remarkably well and recover from their effects with surprising facility. Gross observed that "in old people we are likely to find organic diseases and degeneracies and feeble circulation inducing congestions due to the sinking of the blood in the lungs, liver, intestines, and other dependent parts. They are liable to die of shock or mere exhaustion, and do not bear well losses of blood, lowering of temperature, and loss of food. They frequently convalesce slowly, or, after a partial recovery, fade, waste, and die."

In the case reported nothing but the realization that unless

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, February 21, 1901.

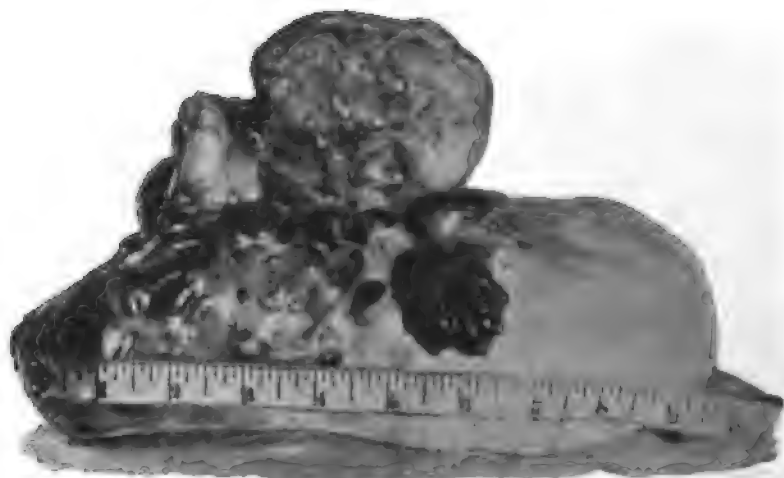
operation was performed death was inevitable would have justified the operation. The patient, Mrs. M. M., was seen in consultation with her physician, Dr. Andrew B. Kirkpatrick, in May, 1899. The characteristic signs and symptoms of a large multilocular ovarian cyst were present, and the following history was elicited: The patient was born February 5, 1820; she had been married and borne eight children, the last at the age of 40. Twenty-six years before she had first noticed a lump on the left side of the abdomen, which had gradually increased in size, but had caused no pain or discomfort until two months previous to examination, at which time the size and weight of the tumor were interfering with locomotion and with various functions. After consultation it was decided to



Left ovarian tumor.

wait and watch the patient for a few weeks; but the symptoms increasing in severity and the patient's sufferings becoming more intense, immediate operation was advised, and she was admitted to St. Joseph's Hospital on May 24, 1899. The urine examination was practically negative. Measurements: circumference of umbilicus, 45 inches; from ensiform to pubes, 21 inches; between iliac crests, 18 inches; pulse 86, temperature and respiration normal; some slight thyroid enlargement was noted. The operation was performed on May 25, 1899. An abdominal incision, 16 centimetres in length, was made, and a small amount of fluid was found free in the peritoneal cavity; proliferating glandular cysts of both ovaries were found. These cysts were tapped and seven pounds of clear fluid evacuated. There being no adhesions, they were very easily removed and the pedicles ligated with catgut. The

abdominal cavity was irrigated with hot normal salt solution and a quantity left in the peritoneal cavity. The peritoneum and fascia were closed with continuous catgut sutures, and the muscles and skin with interrupted silkworm-gut sutures. Only two and one-quarter ounces of ether were required, and the patient's condition when taken from the table was excellent, the pulse full, regular, and strong. Time of operation, thirty-five minutes. The convalescence was uninterrupted, and the only complication was Bell's palsy, which was noticed immediately after the operation and persisted for several months subsequently. The cause for this we were unable to determine. The patient left the hospital on June 18, and is



Right ovarian tumor.

still living and in good health. The tumors removed were two proliferating glandular cysts weighing, with their contents, over fifteen pounds, and showing numerous calcareous plates in their walls.

Thanks to the kindness of my friend, Dr. J. Wesley Bovée, of Washington, who has sent me reports of cases taken from the Surgeon-General's Library, I have been able to prepare a table of ovariectomies upon patients over the age of 80. The oldest person undergoing ovariectomy whose history I have been able to find on record is one reported by Knowsley Thornton. His patient was over 94 years of age, and had a small multilocular cyst of the right ovary which was successfully removed.

LIST OF OVARIOTOMIES IN PATIENTS OVER THE AGE OF EIGHTY.

No.	Operator.	Age.	Nature of tumor.	Result.	Remarks.	Where recorded.
1	Knowsley Thornton.	94	Small multilocular of right ovary; thin vascular walls.	Recovery.	Irritable and difficult of management during recovery.
2	Owens (Brisbane).	87	Ovarian multilocular; no adhesions.	Recovery.	Cystitis for short time after operation. Patient had parovarian on the same side removed eight years before.	Australian Medical Gazette, 1894.
3	Paul Bush (Bristol).	84	Large multilocular ovarian; no adhesions.	Recovery.	British Medical Journal, 1894.
4	Remfry.	88	Right multilocular ovarian; no adhesions.	Recovery.	Patient irritable with some wandering of mind, during convalescence.	Obstetrical Society Transactions, 1895.
5	Herbert Spencer.	82	Tumor size and shape of cottage loaf; twisted pedicle.	Recovery.	No vomiting or collapse; some wandering of mind.	British Medical Journal, 1898.
6	John Homans.	82	Ovarian; cyst wall friable and brown; multilocular; 15 pounds.	Recovery.	Boston Medical and Surgical Journal, 1888.
7	Edis.	81	Multilocular cyst extending to umbilicus.	Recovery.	Clear, jelly-like fluid in cavity of abdomen.	British Gynecological Journal, 1892.
8	Heywood Smith.	81	Tumor adherent to abdominal wall; portion of cyst wall left; weight 47 pounds.	Recovery.	Slight diarrhea during convalescence.	Lancet, June 30, 1894.
9	Carl Schröder.	80	Recovery.	No details of case found.
10	Pippingsköld.	80	Multilocular cyst; no adhesions.	Recovery.	Patient died fifty days after operation, of gastritis and anorexia.	Finska Läkarsällskapet, 1884. Helsingfors.

In 1894 Kelly and Sherwood (Johns Hopkins Hospital Reports, vol. iii.) collected a series of 100 cases of ovariectomy performed upon women over 70 years of age. In this paper they discuss the indications and prognosis of the operation.

Their statistics form a strong argument in its favor and prove that age in itself is no contraindication. Spanier (quoted by Kelly) holds that extreme marasmus is not a contraindication; for this is often only a secondary condition of which the presence and growth of the tumor are the cause, and for the improvement of which the removal of the tumor offers the only possibility; that in this sense, therefore, marasmus may be an indication for the operation.

The main facts emphasized by a study of Kelly's table are thus briefly summarized:

1. That ovariectomy in the aged presents no essential differences from this operation on patients of younger years.
2. That the rate of mortality from this operation on patients over 70, as shown by results in 100 cases, is 12 per cent.
3. That the indications and contraindications for ovariectomy in the aged are essentially the same as for this operation in general.

127 NORTH TWENTIETH STREET.

VARICOCELE OF THE BROAD LIGAMENT.¹

BY

JOHN B. SHOBER, A.M., M.D.,

Gynecologist to the Howard Hospital, the Philadelphia Hospital, and Associate Surgeon
to the Gyneccean Hospital, Philadelphia, Pa.

THE term varicocele is usually employed to signify a dilated condition of the veins of the spermatic cord, forming a soft, elastic swelling. In the female the ovarian veins are the analogue of the spermatic veins, and, being situated in the broad ligament, a dilatation of these veins may very properly be termed varicocele of the broad ligament.

The fact that this disease is not uncommon has been well established by a number of writers. The most important contribution to the literature of the subject is a paper by Dr. A. Palmer Dudley, of New York, in the *New York Medical Journal*, August 11, 1888, who reports four cases in which celiotomy was successfully performed for the relief of the symptoms caused by this condition.

Dr. Edward Malins, of Birmingham,² has carefully consid-

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, February 21, 1901.

² Amer. Jour. Med. Sci., Philadelphia, 1889, xcvi., 840.

ered the etiology, and reports two cases of symptomatic cure following bilateral salpingo-oöphorectomy and excision of the varicose veins. Other cases have been reported by Baldy,¹ H. A. Kelly,² Hirst,³ and W. R. Wilson.⁴

Looking over the literature, I find in all eleven reported cases of undoubted varicocele of the ovarian veins, and I desire tonight to add one more to this list and to briefly consider the lessons which may be drawn from them.

In the first place, when we consider the anatomy of these veins, their situation and relations to other structures, also the remarkable enlargement which takes place in them during the period of pregnancy and the rapid involution which physiologically should occur during the puerperium, it does not seem surprising that a permanent dilatation of them should remain when involution is arrested or under conditions which tend to disturb the equilibrium of the circulation.

Situated immediately below the Fallopian tubes, between the layers of the broad ligament, they form an elaborate plexus which anastomoses freely with the uterine plexus in the lower portion of the ligament. These veins are poorly supplied with valves and empty into the ovarian veins. The right ovarian vein enters the inferior vena cava at an acute angle, and the left enters the left renal vein at a right angle; hence there is a natural tendency to stasis of the circulation and a greater frequency of varicocele on the left side. Malins has pointed out another peculiarity of these veins—namely, that they have muscular trabeculæ and smooth muscular fibres, which by contracting prevent the free return of blood in the capillaries. This is probably the case under certain conditions, but the probable function of these muscular fibres is to aid the return flow of blood through the veins.

A physiological disturbance of the circulation in the broad ligament occurs in the sexual relations, during menstruation, and in pregnancy, and a varicocele of the ovarian veins arising under these circumstances may be looked upon as an exaggeration of an existing condition and is not uncommon. When, however, dilatation of the veins persists by reason of inordinate sexual indulgence, inflammatory changes, malpositions of the uterus, ovaries, or tubes, or arrested involution, the

¹ AMERICAN JOURNAL OF OBSTETRICS.

² Johns Hopkins Bulletin, 1889-1890, 28.

³ Medical News, Philadelphia, 1890, lvi., 588.

⁴ Ibid., 1891, lviii., 694.

condition becomes pathological and demands our consideration from the standpoint of disease.

Anything which tends to obstruct or retard the free return of blood from the broad ligament through the ovarian veins may be looked upon as a cause or a factor in the formation of varicocele. Among the general causes may be mentioned a deficient power of the right side of the heart from organic disease or some lung complication; also liver affections and disorders of the digestive apparatus, obstructions of the portal system, and renal diseases affecting the tone of the vessel wall. These causes are also common to varicosities in other parts of the body, as in the vulva, the spermatic cord in the male, the hemorrhoidal vessels and the veins of the legs, and the condition should be treated upon the general principles demanded by the case.

The local causes of varicocele of the broad ligaments, mentioned in the order of their importance, are:

1. Subinvolution after labor or abortion. It is said to occur most frequently after abortion, because the muscular fibre cells of the walls of the veins, having attained a partial development, do not so readily undergo fatty degeneration, atrophy, and absorption as occurs after the termination of pregnancy at full term.

2. Extensive lacerations of the cervix extending into the broad ligaments, resulting in cicatrices which tend to diminish the circulation in the vaginal and uterine plexuses of veins, thus throwing extra work upon the ovarian plexus. Under these circumstances there is always an associated subinvolution of greater or less extent, involving not only the uterus but the broad ligaments as well, and the two causes work together.

3. Displacements of the uterus, anterior and posterior, combined with adhesions and inflammatory changes, often associated with prolapse of the ovaries, give rise to varicocele by distorting the broad ligaments and thus obstructing the circulation through the veins.

4. Chronic constipation was a frequent symptom in many of the recorded cases, and is considered to be a cause of varicocele, as it favors a stagnation in the pelvic circulation.

The symptoms are complex and dependent upon the causes which are most prominent in the individual case. All the symptoms of subinvolution, cervical lacerations, displacements, inflammatory changes, and constipation are more or

less associated with the characteristic symptoms of the disease itself. These are said to be a sense of weight and fulness in the pelvis, most felt at the sacrum or perineum, and sometimes extending upward toward one or other kidney.

Much stress is laid upon the fact that all symptoms are aggravated by the upright posture, long standing, and exertion, and that they are almost immediately relieved by lying down. In looking up Dr. Baldy's case in the Gynecian Hospital records, I find that she complained chiefly of being tired and dragged out, with weight and fulness in the pelvis during the day, and feeling of refreshment upon rising in the morning.

The diagnosis is made by a consideration of the symptoms above mentioned and the physical examination. This should always be made per rectum, which best enables one to palpate the broad ligaments.

Under favorable conditions without ether, and almost always under an anesthetic, the dilated and tortuous veins can be felt in the broad ligament as a yielding, compressible mass which sometimes may reach the size of a hen's egg.

On looking over the records of the reported cases, I find that almost all have occurred in multiparous women who have suffered from subinvolution, lacerations, and displacements. When the disease is of long standing certain changes take place in the ovaries. Dudley says that these changes are similar to those produced in the testicle—namely, atrophy of the stroma, and interference with the proper development of the ova to such an extent as to produce cystic degeneration and consequent sterility.

The treatment of varicocele of the broad ligament depends upon the complications associated with it. When these do not at once call for operative procedure, general constitutional and local treatment should be tried. The object is to restore the equilibrium of the circulation and build up the general health. Rest, exercise, diet, and regulation of the bowels should be attended to. Local bleeding by cervical puncture is of great value and should be done soon after a menstrual period, and again ten days after, drawing a drachm or two of blood and placing a glycerin tampon against the cervix. The patient should be instructed to take hot vaginal douches daily for half an hour at a time in the dorsal position, allowing the water to flow freely to the vaginal vault. If there is subinvolution or retroversion it is advisable to place a well-adjusted pessary.

While this treatment may temporarily relieve a few of these cases, I doubt whether a cure will ever be effected by it. It is proper, however, to try it before advising a radical operation.

The operation for varicocele has been followed by symptomatic cure in all of the reported cases. With the exception of Kelly's case and my own, in which the veins were simply ligated in two places, the ovary and tube on one or both sides were removed along with the dilated veins. The necessity for the removal of the adnexa was not always apparent, as in several instances healthy organs were sacrificed. The method most employed for the removal of the veins was the excision of that portion of the broad ligament containing them by a V-shaped incision. In two instances a purse-string suture was used.

The advances made along the line of conservative surgery in recent years have demonstrated the inadvisability of sacrificing the ovaries and tubes unless they are so badly diseased as to demand removal. In the presence, therefore, of comparatively healthy adnexa, it would be quite as unjustifiable to perform oöphorectomy or salpingo-oöphorectomy as to remove the testicle for varicocele of the cord.

The best method of dealing with the varicocele is a subject upon which I hope to receive some enlightenment by the discussion this evening. Three procedures have been employed—namely, excision by a V-shaped incision of the broad ligament and sewing the edges together; a purse-string suture and cutting away the mass; and, lastly, as in Kelly's case and my own, simple ligation of the veins in two places about an inch apart.

As mentioned above, all the cases so far reported resulted in permanent cure. The case which I am about to report, however, was a failure, and may be accounted for by the fact that the veins were ligated with catgut. Shortly after the patient went home she began to complain of the old symptoms, and now, sixteen months after the operation, she is as great a sufferer as she was before.

The above considerations suggest that the best method of dealing with similar cases would be to tie the mass of veins in two places about an inch apart and excise or sever all the vessels between the ligatures.

Mrs. P., age 30, married eleven years, IIpara, last labor two years ago. During past two years menses every three

weeks, duration seven to ten days, profuse, dysmenorrhea. During interval a recurrent soreness and dull pain in left side of pelvis, increased by exertion or long standing and relieved by recumbent position. This is usually followed by a profuse yellow and blood-stained leucorrhea, and seems to have no connection whatever with the menstrual period. She has constant sensations of numbness in the left side, extending upward toward the kidney. Examination showed slight laceration of the perineum, an extensive stellate laceration of the cervix, with much scar tissue in both vaginal fornices. Uterus slightly enlarged, retroverted, and not freely movable. Adnexa normal.

After amputation of the cervix the abdomen was opened and the fundus was found in the cul-de-sac. Both tubes and ovaries were prolapsed, slightly adherent, but apparently normal. In both broad ligaments there were large masses of varicose veins, the left side being most pronounced. The walls of the veins were not thickened.

The mass of veins on each side were ligated with catgut, all adhesions were broken, and ventrosuspension of the uterus was performed. The patient made an uneventful recovery and returned home at the end of four weeks. At the end of sixteen months her physician reports that the only improvement is that her menses occur every four weeks instead of three and that the flow is not so profuse. She still has the dull aches and pains, increased by exertion or long standing.

1781 PINE STREET.

A CASE OF INFECTIVE FEVER RESULTING IN PREMATURE LABOR, PERITONITIS, AND DEATH.¹

BY

JOHN H. GIRVIN, M.D.,

Gynecologist to the Presbyterian Hospital, Philadelphia, Pa.

(With chart.)

THE following case is reported because it seems to me to present many interesting and puzzling questions from the standpoint of etiology, as well as to emphasize the difficulties

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, February 21, 1901.

of determining the extent of an infection after labor and the question of operative interference.

Mrs. C. R. was admitted to the medical ward of the Presbyterian Hospital on January 1, 1901, with a provisional diagnosis of pneumonia. On the following morning the history was taken, which I copy from the records of the medical ward by permission of Dr. J. H. Musser.

Mrs. C. R., white, age 18; housewife. Married eleven months; no miscarriages; no labors; at present pregnant for the first time at about the seventh month. Menses began at 14 years; always regular. Husband acknowledged gonorrheal infection at the time of marriage, but she has never had any leucorrhea, though she has had at times frequent and painful urination for the past year. Mother died in confinement; otherwise family history is negative.

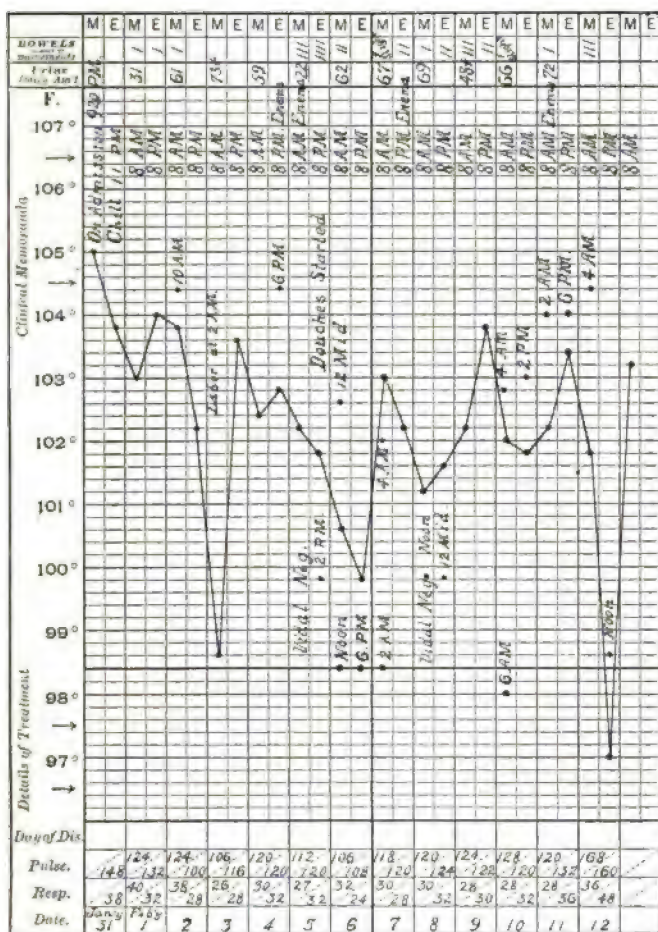
Present illness began about January 20 with a slight cold. On the 27th she was taken suddenly with vomiting, chill, and pain in the side, since which time she has been constantly in bed with a high fever and at times delirious, but has not been attended by a physician.

At present, examination shows a rapid, regular, but rather galloping pulse; heart sounds soft, slight systolic murmur with the first sound. Tongue slightly coated, but moist. Chest, slight impairment in the left axilla and left and right lower back. Sounds clear over the front of chest, but in the axilla they are harsh, and there are a few crepitations in the back; on the right side sounds are distinct, while they are harsh on the left side. There is no tubular breathing. Examination of urine shows a specific gravity of 1.010, trace of albumin, no casts, no sugar, but pus and epithelium present.

For two days the condition remained about the same, with the exception of an increasing amount of pelvic pain, and on Sunday morning, about 2 A.M., she was delivered of an apparently healthy male child of about eight months, which lived until the following Tuesday morning. She was attended by the resident physician, who reported a normal, easy labor and complete expulsion of the placenta. Labor was followed by a fall of temperature to normal, but an immediate rise to 103.6°.

At this time percussion note over the chest was distinctly impaired at the right base and at the left base and at the apex behind, but there was no distinct tubular breathing. The urine examination was the same, with the addition of a few red blood corpuscles. Widal examination negative and blood examination for malaria negative. Leucocytes, 18,200 present.

At this time I saw the patient for the first time, and found her with engorged and tender breasts, very large, heavy, and painful. The abdomen was slightly distended and tense, and there was some tenderness in both ovarian regions, but this was not marked. Vaginal examination showed a relaxed



Acute purulent peritonitis.

vaginal outlet, very slight discharge, and the uterus in good position and fairly well contracted. On the right side there was slight tenderness and a little fulness, but no distinct mass. Tube and ovary could not be mapped out. On the left side a very much distended rectum so filled up the pelvis that nothing else could be distinguished. The examination did not

cause very severe pain. The lochia had been normal but scanty, but during the last few hours had become more scanty and dark-brown in color and with a strong meaty odor, but was at no time purulent or offensive. Examination of the vaginal discharge at this time failed to show either gonococcus, streptococcus, or staphylococcus.

I advised thorough purgation, vaginal and intrauterine irrigation twice daily; turpentine stupes over the lower abdomen; compression and support of the breasts; and somewhat increased stimulation. This was followed by three large bowel movements and a drop in the temperature to normal, where it stayed almost all the next day. During that afternoon the examination of blood showed 17,000 leucocytes.

The condition continued about the same for the next two days, with the exception of a slight increase in the tenderness in the lower portion of the abdomen. Leucocytes at this time, 19,800.

I saw her a second time on February 9 and found slight distension of the abdomen, with some tenderness in the right ovarian region, but no distinct mass; almost no vaginal discharge; leucocytes 16,000, and there seemed to be no indication for operative interference. On the following day leucocytes 23,600.

On February 11, as the chest symptoms had entirely cleared up, she was transferred to my ward late in the afternoon. I saw her the following morning, and found her with a rapid, running, feeble pulse; skin cold and moist; color very pale, almost bluish; abdomen distended and tender, with abdominal muscles rigid. Vaginal examination showed the uterine os well contracted; uterus rather large and flabby, but no distinct fulness in either vaginal fornix. No vaginal discharge. There was evidently a general peritonitis, and, as the patient was almost moribund, there seemed no indication for any operative measure. Dr. George Erety Shoemaker saw her with me at this time and concurred in this opinion.

She died the following day at 8 A.M.

Autopsy, by Dr. W. E. Hughes, February 13, 1901.—*Right pleural cavity* contains no fluid. There is a small amount of recent lymph on extreme lower and outer border of lower lobe and upper border of diaphragm. No old adhesions. *Left pleural cavity* contains no fluid. Recent lymph over lower half posteriorly of lower lobe and surface of diaphragm. *Right lung* crepitant throughout. In lower lobe there are a few wedge-shaped areas of extreme congestion. *Left lung*

tissue crepitant throughout. Areas of congestion similar to those in right lung. They are more numerous. Their bases are distinctly raised above the surrounding lung tissue. In no place is there any distinct pneumonic consolidation. There are similar areas in upper lobes. *Pericardium* contains no fluid; no adhesions. Heart shows nothing remarkable. *The abdominal cavity* is filled with yellow, purulent fluid freely distributed throughout. *Abdominal organs* are covered with lymph, but there are no adhesions except in pelvis, where about the uterus they are broken up with considerable difficulty.

The left Fallopian tube is bound down firmly by adhesions at the fimbriated extremity; is enlarged to about three-quarter inch in diameter. On pressure pus exudes through fimbriated end. Posterior to this is a pus-containing sac, 1 inch thick and 2 inches long, which has evidently been developed in the ovary. *Right tube* apparently healthy, but a few drops of pus can be squeezed out from the extremity. *Right ovary* healthy but for a slight cyst in its substance.

Uterus: The placental site is apparently healthy. The uterine wall does not seem to be inflamed or contain any pus foci. Endometrium normal.

Left ureter is dilated to about three times its normal size. Pelvis of kidney also dilated. Mucous membrane of ureter is not inflamed. *Left kidney*: Pale. Relation of cortex to medulla about normal. Numerous areas in kidney congested, tough on section; probably destruction of substance. Areas of purulent collections one-quarter inch in diameter. *Right Ureter*: Dilated as left. Pelvis dilated. Walls thickened. Contains purulent material. *Right Kidney*: Substance pale. Streaked in cortex and medulla with pus. *Spleen*: Large and dark. Contains a hemorrhagic infarct. Not infected. *Liver*: Capsule of Glisson strips very easily. Liver tissue is soft, mottled. Area of acute congestion. No pus foci.

Pathological Diagnosis.—Ovarian abscess; pyosalpinx; general septic peritonitis; surgical kidneys (?).

Cause of death; septic peritonitis.

Bacteriological examination of pus taken from the peritoneal cavity showed the presence of the colon bacillus, which was also found in the pus from the Fallopian tubes. The pus from the kidneys showed the presence of streptococcus only. Unfortunately no culture media were at hand for growing the gonococcus, so its presence or absence was not determined.

The following questions present themselves: What was

the cause of the original infection producing the sudden attack of nausea with vomiting, chill, and fever, occurring four days before her admission? Was it an attack of influenza and was the same cause responsible for the premature labor? Was it an influenzal pneumonia which produced the high temperature and induced the premature labor, although with so few physical and postmortem signs in the lungs? What part did the ovarian abscess play in the course of the attack? Could it have been of influenzal origin, as there were no evidences of its having been formed from a tubo-ovarian formation? How may we connect the symptoms and history with the surgical kidneys? Their appearance did not indicate the presence of more than about three weeks of acute inflammation, but may there not have been a slight focus of infection from old gonorrheal cystitis which was lighted up by an attack of influenza in the latter weeks of pregnancy? Unfortunately no examination was made of the inside of the bladder. Pus was present in the urine at the time of admission.

May the salpingitis have been started up at the time of labor from a latent infection of the tubes, or possibly from rupture of the ovarian abscess and the septic peritonitis caused from this? Both infections show the colon bacillus post mortem. The temperature remained high, with the exception of the drop immediately after labor until the fourth day after delivery, at which time it again arose and remained high until the day before death.

I am led to the belief that the sequence of events was first an influenza, followed by an influenzal bronchial pneumonia causing the high temperature and the premature labor, and that there had been an old gonorrheal infection which was dormant in the tubes, and which had probably also caused a cystitis and an old but slight infection of the pelvis of the kidney, and that the influenza started this up, and the labor prepared the way for the acute salpingitis, which was soon followed by the septic peritonitis, producing a fatal result.

This does not account for the ovarian abscess, and I am unable to satisfy myself as to its proper place in the case, although I feel that an influenzal infection may cause an ovarian abscess. The woman was undoubtedly in a generally severely septic condition at the time of her admission, and this may have caused the premature labor. It certainly contraindicated any operative interference from the very first, and may explain all of the symptoms without the introduction of influenza, but I feel that here lies the interest of the case.

SOME RECENT OPERATIVE WORK FOR THE RELIEF OF
PROLAPSE OF THE UTERUS AND BLADDER.¹

BY

I. S. STONE, M.D.,
Washington, D. C.

(With three illustrations.)

IN the effort to add something brilliant and important to the many achievements of gynecological surgery, we may overlook some comparatively insignificant disorders which give rise to much inconvenience and distress, even though such an infirmity may not cause real danger to life.

To our mind the zeal now so largely manifested in the field of abdominal surgery is out of proportion to that directed to the scientific treatment of the various lesions due largely, if not entirely, to parturition. It is quite probable that in your city, as in the one in which I reside, the abdominal sections nearly equal in number the plastic and minor operations.

In one hospital in Washington, with a goodly number of gynecological cases, the report for 1899 shows 25 operations upon the ovaries and tubes alone, with 25 curettings for endometritis, 4 trachelorrhaphies, and 11 perineal lacerations treated. In a special hospital where a large number of gynecological cases are treated annually, about 50 operations were performed upon the uterine adnexa, and 114 celiotomies were performed for all purposes. There were 98 other operations, and about half of these comprised the curettings, trachelorrhaphies, and plastic operations.

In this hospital plastic operations for the relief of cystocele and perineal lacerations were only 8 in number, with the exception of those performed when the abdomen was opened at the same sitting.

This showing represents about the average for each year. Two explanations may be offered to show the reason for this very great disproportion of minor to major operations. One

¹Read by invitation before the Cincinnati Academy of Medicine, February 18, 1901.

is the lack of appreciation of these cases; another is that a large number of minor operations are performed by the family physician. Space sufficient to discuss these propositions is wanting, but we cannot let this opportunity pass without expressing great regret that more of these cases are not recognized and sent for treatment to those in a position to afford the best surgical relief.

The labors of those in this country who have been foremost in urging the need of these plastic operations, led by the inimitable Emmet, have never been appreciated at their full value. No one knows this better than Dr. Emmet himself, for he has thus frequently expressed himself. It may have been the conservative temperament of Dr. Emmet which led him to study the mechanism of pelvic lacerations and their repair, rather than the more sensational field of abdominal surgery, but it is evident that real gynecology owes more to him than to any one man because of this persistent and forceful application of his best thought for so many years.

What we may have to suggest by way of an addendum to the generally accepted ideas of our pioneers in gynecology refers to certain features of the subject which, in text books as well as in our experience, have been insufficiently or only partially considered. Thus we find that the treatment of prolapse of the bladder, or cystocele, is altogether ignored or greatly undervalued by some surgeons, and several authors give the subject scant notice.

In our opinion this is a great mistake, and we are confident that the failure of anterior colporrhaphy, Stolz's operation, etc., is due to a want of appreciation of the existing pathological conditions and the necessary utilization of the changed structures in the operation for their relief. The great variety of opinion upon this subject, the extensive literature regarding it, and the very uncertain results obtained from operative or other treatment, have combined to add a degree of doubt and mystery where, in the opinion of the writer, there should be very little occasion for speculation or uncertainty. In reviewing the literature, or in making an attempt to demonstrate the mechanics of uterine or vesical prolapse, and in suggesting a method of cure, one is reminded of what was said by the German philosopher Hegel when speaking of himself, that "only one man in Europe *understood him*, and he misunderstood him." However this may be, let it not be said of any one of us as was said of the Italian philosopher Cremonini, that he re-

fused to look through a telescope, when invited to do so, lest he might upset his preconceived theories.

The first and strongest objection we have to urge against the present theory of pelvic support is that the lower plane or pelvic floor is considered the chief support of the pelvic contents. We instinctively turn to other or additional support of the floor above the pelvis, the keystone of which is the so-called perineum. The uterus is well sustained, even if all vaginal and perineal supports are removed. Besides this we find that in all cases of enterocele or vaginocoele it is difficult, if not impossible, to cure the case if one entirely relies upon such measures as include or utilize the pelvic floor only, or, in other words, upon a posterior colporrhaphy. Our first aim should be to prevent the descent of the uterus and bladder, for if this is done the rest is much easier of execution and such results have greater permanence. The recto-vaginal fascia, and that between the uterus and bladder and the bladder and vagina, is always permanently overstretched in bladder prolapse. To overcome this incapacity, and to add to the strength of the upper or superior plane of the pelvis, is our object in undertaking an operation to cure a prolapse, and we, moreover, consider such prolapses as veritable hernia. The pelvic outlet may be compared with that of the inguinal region. We have an internal and an external abdominal ring, so placed that the abdominal viscera cannot escape by direct transit; and we likewise have a superior pelvic plane which is continuous with the anterior surface of the broad ligaments, includes the base of the bladder and the fascia under it, which in turn is spread out over the anterior vaginal wall and is attached to the brim of the pelvis laterally and to the symphysis in front.

Nearly parallel to this upper plane, and overlapping it, is the lower plane, or what is called the pelvic floor. The upper plane extends from the pubic arch along the anterior vaginal wall to the cervix uteri. The lower plane extends from the fourchette to the coccyx, including the perineum and the posterior vaginal wall, and the muscles and fascia, etc., which support the pelvic viscera from below. In the erect position the weight of the viscera must impose upon the upper plane quite as much as upon the lower, but the two give the very best natural support owing to their compensatory anatomical relations. Like the abdominal rings, so with the pelvic outlet in a healthy, uninjured individual, the greatest support is given

by an overlapping of these two planes, the perineum extending far in front of the cervix.

All the structures which lie in front of the advancing head of the child in its passage through the pelvis go to make up this "upper plane," and must be considered when we deal with prolapse of these organs quite as much as those posterior to the birth canal or the pelvic floor. The bladder is suspended partly by peritoneal attachments, and in part by its relation to the uterus, which, if overstretched or overcome by added weight of superimposed viscera, can never be restored without a resort to some kind of surgical handicraft. In view of these considerations, we desire as far as possible in such cases to restore the bladder to its former place in the pelvis, returning the viscus to its proper anatomical relations to the adjoining organs, and simultaneously to utilize the two pelvic planes, the superior and inferior, in a correct relation to each other, as the only method of permanently sustaining the entire pelvic contents.

In a paper read about a year since we described a new method of treating prolapse of the uterus and bladder, which consisted in separating the bladder from the uterus and suturing the excised anterior vaginal wall to a point on the anterior surface of the uterus on a level with the origin of the round ligaments. The uterus, if greatly prolapsed, was secured to the abdominal wall. Since that time a number of cases of cystocele have been treated by the method now presented. For the sake of comparison of the technique of the present operation with that proposed one year ago, I quote the steps of the "fixation" operation: first, incise vagina over cervix; second, separation of bladder from uterus and adjoining tissues; third, suture of vagina to higher point on anterior surface of uterus; fourth, opening the abdomen and further separation of bladder from uterus and suture of reflexure to scarified surface of uterus near fundus; fifth, closure of abdomen; sixth, posterior colporrhaphy and perineorrhaphy.

Given a case of prolapse of the bladder to any extent, we must first estimate how much reliance can be placed upon its uterine and pelvic support before undertaking its cure. In other words, if the uterus is so movable downward as to be useless as a basis of support, it must be made secure, and the operation should proceed along the lines previously quoted.

But we have, in a vast majority of cystoceles, or in any case requiring anterior colporrhaphy, to elevate the bladder in a

rational manner which will furnish new and better support to its base and which will restore the viscus to its normal position. Not only will it correct the usual cystocele, but it will furnish such support to the uterus which has reached the first or even the second stage of prolapse as will obviate the necessity for uterine suspension or fixation in a large majority of such cases. The bladder is easily separated from its entire connection with the upper pelvic plane through an incision in the anterior vaginal wall. It can at once be seen, when this is done, that the organ becomes permanently attached throughout its undersurface in a new and higher position. After cutting away all excess of flap (the distended anterior vaginal wall which presented in the vagina as a cystocele) and after pushing the bladder high up in the pelvis, these flaps are brought together, edge to edge, in the median line. The incision extends from the meatus urinarius to the cervix uteri, down to the cellular tissue between the vaginal wall and the bladder itself. With ordinary care the bladder need never be torn. I have not injured the organ nor have I found the ureters exposed in a single instance. The separation of the bladder once begun is easily accomplished; the only drawback is a pretty free hemorrhage, which requires several clamp forceps as we proceed. I use interrupted sutures of good, firm catgut only, and have had no trouble whatever with healing of the wound. The cases thus far operated upon have absolutely perfect results so far as the restoration of the anterior vaginal wall is concerned.

The bladder is not only in place, but there is no ridge of everted vaginal wall projecting into its base, as must follow a Stolz purse-string or any of the denudation operations known as anterior colporrhaphy. This ridge of everted vaginal wall, with the bladder above it and the weight of the intestines upon that organ, is liable to unfold and the denuded surfaces tear apart, as we all know does happen occasionally in operations heretofore done for the relief of cystocele.

In the usual colporrhaphy as ordinarily performed we narrow the vagina after denuding more or less of its surface. We not only do this, but we necessarily draw the bladder with this vaginal fold toward the median line and away from its lateral supports. The base of the bladder is narrowed, for it is probably adherent to the vaginal wall upon which we operate. In the "Stolz operation," and probably in Emmet's or Sims' operation for cystocele, additional support is dependent entirely

upon the union between the denuded vaginal surfaces. It is impossible that the cellular tissue or fascia around the vagina can be utilized unless by accident of inflammation extending beyond the line of sutures. Even were this possible, the position of the bladder is far from ideal and sustains the same intimate relation to the vaginal wall, although in a distorted position.

Surgeons generally have assumed that good results attained by the denudation operation are due to a restoration of the pelvic fascia to something like its normal relations. This is largely true in posterior colporrhaphy as done by Emmet, Reamy, and others.

But I must respectfully dissent in my view from those who hold that the average anterior operation succeeds for this reason, owing to the fear of wounding the bladder when the sutures are placed, and the support expected of the fascia may not be realized. In fact, the whole weight of the bladder with the viscera above is dependent upon the adhesion of denuded surfaces. It is at once apparent how much more may be expected of an operation which absolutely guarantees a firm union of fascia as it does the entire thickness of vaginal wall.

As before mentioned, the usual operation for restoration of the pelvic floor is almost invariably necessary in addition to the one described, and if properly done the parts are afterward in about the shape and the vagina is of the same calibre as before childbirth. This is absolutely as true of old women as of younger ones, and the beneficial results are appreciated by the husband as much as by the wife. It is very gratifying to hear women say they have felt comfortable after long walks or other exercise the first time for years.

The childbearing woman may continue many years with constant suffering, due to lack of support to her pelvic viscera. It is often true that women fail to tell their symptoms because they do not know the real cause of their poor health. The symptoms are not always easily described. Women are easily fatigued, and often drag themselves in their daily round of duty without knowing that they can be relieved. They lose the freshness of youth and grow old far too early, yet do not have such alarming or dangerous symptoms as would drive them to seek treatment.

Indications.—If all of us who operate for uterine displacements, prolapse of the bladder, or for perineal lacerations would take certain precautions in making the preliminary

examination of gynecological patients who present themselves for treatment, we would find a large number of cases which would be benefited by the operation now proposed. This is quite as true of minor as of major cases. How many of us ten years since found movable kidney in from one-fourth to one-eighth of all gynecological cases? How many obstetricians had seen laceration of the cervix or perineum until their attention was called to the fact? So in the examination of our patients we should not be satisfied with the digital examination, as though we sought for diseased adnexa only, but we should see what degree of laceration or relaxation is present in

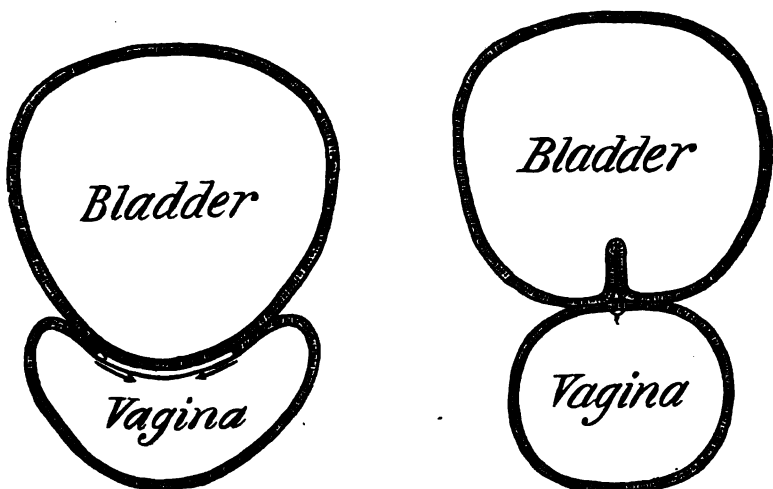


FIG. 1.

FIG. 2.

FIG. 1.—The distended anterior vaginal wall, showing the area to be denuded. (In outline.)

FIG. 2.—Shows the same view of bladder and vagina, the denuded portion closed, with the result of pushing a fold of vagina into the base of the bladder.

each case, and should call upon the patient to "bear down" during the examination, that we may know how much mobility the organs possess. The very bad cases are easily enough recognized, but there are a large number that must be sought after. We see quite a number of suspensions of the uterus with the fundus anchored to the abdominal wall and the cystocele presenting at the vulva. This is because the relaxed anterior vaginal wall presents no resistance to the pressure of the cervix, which swings forward when the weight of the intestines comes upon its posterior surface. Such cases treated

by suspension alone are not entirely relieved, and no case of cystocele is cured by elevating the uterus.

It is possible to afford relief, to cause the cystocele to be drawn out of sight temporarily; but when the suspensory ligament forms between the abdominal wall and the fundus uteri,

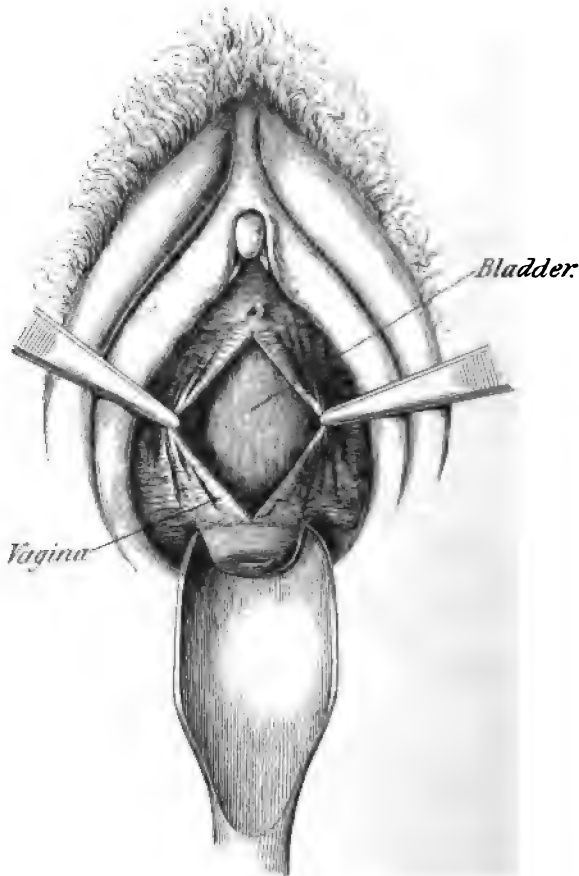


FIG. 3.—Shows the first steps of the operation for cystocele. The incision has been made and the bladder separated on each side. The bladder may after this be separated from the anterior surface of the uterus if desired. The excess of flap is then excised, and the wound is closed in the median line with interrupted sutures.

as we desire in most cases, permitting the uterus to resume its nearly normal position, the cystocele will again appear at the vulva. In all cases we may be reasonably sure that a cystocele is a permanent disability until relieved by operation, and, if held out of sight by a suspended uterus or by a pessary, is nevertheless an undesirable disability.

The writer wishes to call the attention of the profession to this operation, with the hope that in the course of the other operations we may not neglect what by some may not be thought important. We do not advise every woman who has a slight cystocele to submit to operation, but we desire to call attention to an operation which is easily performed, requires but little time in most cases, and which will serve to perfect and give permanence to other and perhaps more important surgery.

Technique.—After the patient has been prepared for operation and placed in lithotomy position, an incision is made in the median line at the crest of the cystocele through the thickness of the vaginal wall. This incision, if made about two inches in length, gives ample room, and can be enlarged if so desired. The thickness of the vaginal wall can easily be estimated, and can be divided with scissors without fear of cutting into the bladder. The sides of the incision are caught with forceps and pulled apart, when the white cellular tissue shows where the separation may be continued. With a gauze sponge we can rapidly separate the flaps from the bladder as far on each side as may be required. In prolapse of that portion of the vaginal wall under the urethra, known as “urethrocele,” we may avoid a free hemorrhage if we do not extend the separation too far laterally. There is a most satisfactory use of this method in any case of loss of control of the neck of the bladder. The operation in such cases is merely removing the urethrocele, and the result is most excellent as far as my experience extends. The incision extends the entire distance from the meatus to the cervix uteri when we operate for prolapse of the bladder. When the bladder is pushed away from the vaginal wall through the short incision first made, the opening may be extended at will with the scissors with the bladder pushed quite beyond danger of injury. In other words, the vaginal wall is divided after the bladder is pushed away. In each case the operator will easily learn how much vaginal tissue to cut away before closing. With two pairs of forceps he holds the edge taut and can see how much tissue should be removed. In a case prolapsed sufficiently to allow the uterus to reach the floor of the pelvis, or the cervix to nearly reach the introitus, we may expect a most excellent result after this operation alone, without opening the abdomen or resorting to utero-suspension or fixation.

The writer was surprised at the results obtained in such

cases; and although he frequently performs utero-suspension or fixation, he admits that such operations are never desirable if a vaginal operation will answer. The only embarrassing delay in this operation is pretty free hemorrhage. In many cases several clamp forceps have been required. In rare instances a fine catgut suture has been placed to control bleeding before closing the wound. Interrupted sutures are placed about one-quarter inch apart, and for obvious reasons running sutures of any kind should be avoided. The vagina is lightly packed with gauze and pad applied to vulva as in all perineal, rectal, or vaginal operations.

The nurse should not allow more than six ounces of urine to collect in the bladder, although more than once we have seen sixteen ounces retained without the least injury to the wound.

Finally, we may be absolutely sure the patient can safely leave her bed in two weeks, unless detained longer by an operation upon the posterior vaginal wall or perineum.

1449 RHODE ISLAND AVENUE.

DERMOID AND OTHER CYSTS OF THE OVARY :

THEIR ORIGIN FROM THE WOLFFIAN BODY.¹

BY

SAMUEL W. BANDLER, M.D.,
New York.

(With Illustrations.)

CASE V. *Bilateral Dermoid Cysts.*—The cysts are about the size of a fist, being nearly of the same size. The inner surface of the cysts is smooth, with the exception of those points where the dermoid prominences were found. It must be mentioned that in each of these cysts two prominences were recognized.

The contents of both cysts were alike. In a section through the dermoid prominence of one cyst was found a tooth-like structure of irregular form. In microscopic sections no other bone elements were found.

Microscopical Examination.—The dermoid prominence is covered with squamous epithelium and shows pointed pro-

¹ Continued from p. 519, April JOURNAL.

jections. The underlying layer contains a large number of sebaceous glands, hair, and hair follicles. Fat tissue in large

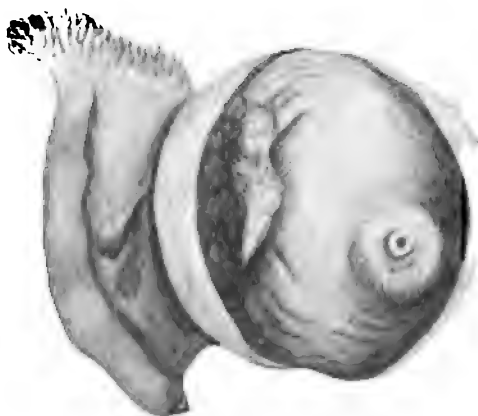


FIG. 78.—Dermoid cyst of the left ovary of Case 5. This dermoid prominence reminds one of a mamma with mamilla.

amounts is present, in which are found groups of yellow pigmented cells with distinct nuclei. At the base of the prominence is a cyst the size of a pea (Fig. 79).

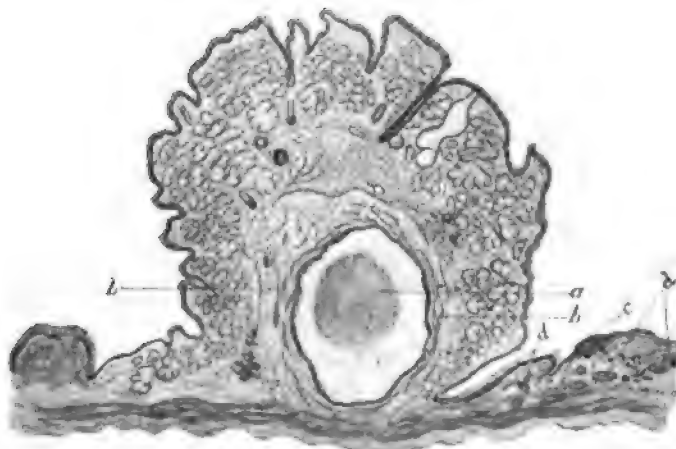


FIG. 79.—Section through dermoid prominence of Case 5, right side. *a*, cyst with papillary projections and ciliated epithelium and glandular offshoots; *b*, longitudinal and circular muscle layer about cyst *a*; *c*, ciliated epithelium on the interior of the dermoid cyst; *d*, glandular offshoots of the ciliated epithelium (*c*).

This cyst is lined with a stratified epithelium showing cilia at certain points, and sending distinct projections of a papillary character into the interior of the cyst. Around it are

epithelial structures forming small glands, which are lined with a cylindrical epithelium with transparent protoplasm. This cyst is entirely surrounded by a layer of muscle fibres and muscle bundles showing partly an arrangement into a longitudinal and circular layer (Fig. 79, *b*).

On the one side the squamous epithelium covering the prominence passes over upon the ovarian base as stratified and simple ciliated epithelium, from which glands pass off into the ovarian tissue (Fig. 79, *c*). On the other side the squamous epithelium passes over into a stratified ciliated epithelium. As regards the origin of the cyst *a*, it is seen that on the inner surface of the dermoid cysts the ciliated epithelium

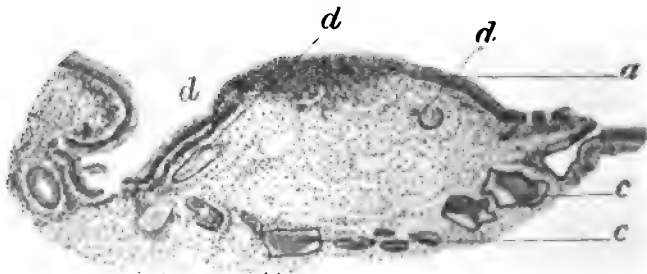


FIG. 80.—Points *c* and *d*, Fig. 79, strongly magnified. *a*, ciliated epithelium; *d*, glandular offshoots lined with cylindrical and ciliated epithelium; *c*, glandular offshoots lined with flat epithelium.

is connected with glandular structures (*c* and *d*, Figs. 79, 80) which are partly lined with a stratified epithelium also showing cilia, and partly with a simple flat epithelium evidently compressed by the secretion. In the secreted contents of these little cysts or glands are found cells with a clear protoplasm and with a distinct central nucleus. From this point (see Fig. 80) these glandular structures may be followed with increasing size up to the large cyst *a*, Fig. 79, so that the latter, situated in the middle of the dermoid prominence, certainly stands in relation to the ciliated epithelium which covers partly the dermoid prominence and which lines the dermoid cyst. There is in addition a complex of closely grouped glandular structures lined with cylindrical epithelium, in various parts of the dermoid prominence, which, with a little fantasy, resemble the structure of a thyroid gland. One area is exceedingly rich in cells of a spindle shape, and others resemble giant cells, so that this area resembles a sarcomatous nodule.

The dermoid prominence in the cyst Fig. 78 bears quite a resemblance to a mamma in miniature.

This prominence contains so many structures that we must first describe its appearance under weak magnification. The surface is covered with stratified squamous epithelium showing thin, thorn-like prominences. Below it are numerous sebaceous glands, much fat tissue, and many hairs. At one point of the surface is a series of villi arranged in a semi-circle and opening like a glandular structure upon the sur-

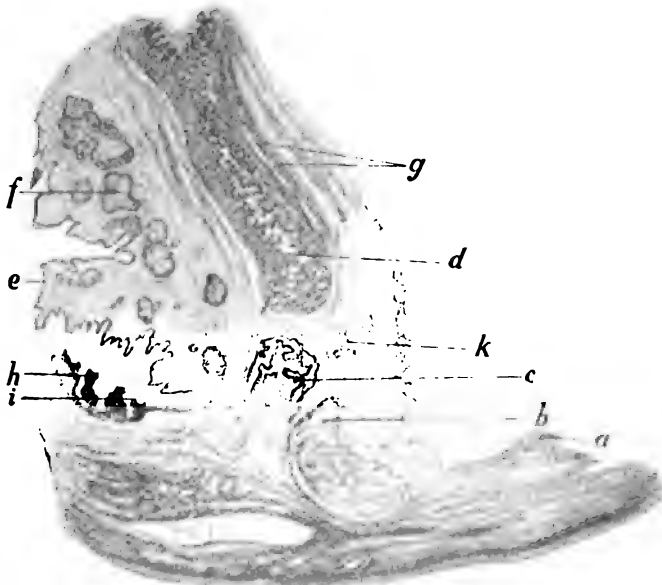


FIG. 81.—Dermoid prominence from cyst, Fig. 78. *a*, ovarian tissue with many follicles; *b* and *c*, glandular structures described in text and in Fig. 83; *d*, glandular structure with common duct and surrounded by a double muscle layer, *g*; *e*, stratified squamous epithelium going over at *i* into cylindrical epithelium; *h*, prominences consisting of granulation tissue; *k*, glandular structure resembling "thyroid gland"; *f*, sebaceous glands.

face. This glandular structure extends through the centre of the entire prominence, ending at *d*, Fig. 81, where the lining consists of cylindrical epithelium, and at *c* an area containing very peculiar cells. This area *c*, and the area *b* lying in the ovarian tissue which forms the base of the prominence, as well as the glandular structure *d*, are surrounded by several layers of muscle fibres running in various directions.

Microscopical examination by strong magnification of the glandular structure *d*, Fig. 81, shows it to be connected with

the structures *c* and *b*. In its interior is a space or duct which runs up to the surface of the dermoid prominence. At the opening the above-mentioned villi resemble in their arrangement and structure the glands of *Lieberkühn*.

This outlet or duct is lined further down with a high cylindrical epithelium (ciliated epithelium?) which sends depressions in all directions. This duct is surrounded by a broad layer of tubular glands which lie so close together that scarcely any interglandular substance is present. The small amount of interglandular substance is a very delicate connective tissue.

Between these glands at various points are found groups of round cells which have been called "Peyer's plaques," in

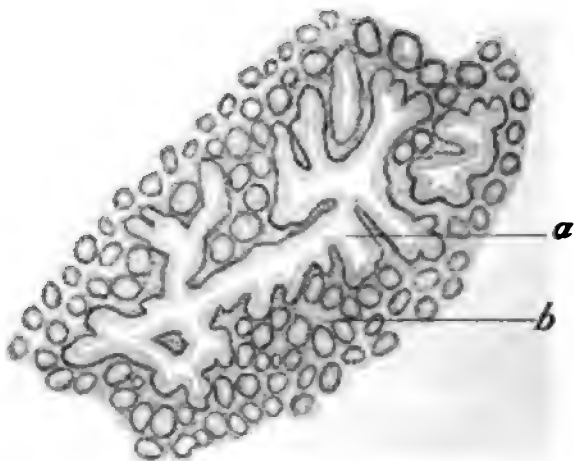


FIG. 82.—The "common duct" of Fig. 81 strongly magnified. *a*, the duct; *b*, the surrounding glands.

order to carry out a wished-for resemblance to the intestinal mucous lining. Around this entire glandular structure are found two layers of smooth muscle fibres, both running longitudinally, and including between them a thin layer of connective tissue. In the depths the duct divides into numerous branches, and it can be here distinctly seen that the epithelial lining consists almost entirely of beaker cells.

The structure *c*, Fig. 81, consists of the same glandular forms as just described.

The gland lumina are wider than those already described, and more beaker cells are present. In the interior of this glandular structure is a substance which consists of a very

delicate connective-tissue network in which are situated remarkable pyramidal cells (Fig. 84). On two sides this tissue is connected with the enveloping muscle layers, so that it is a

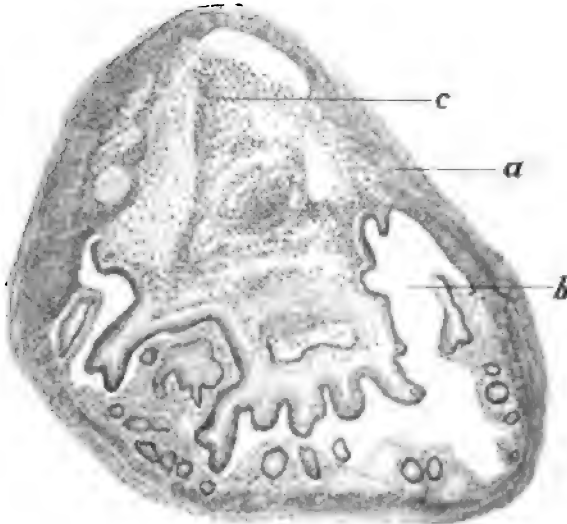


FIG. 83.—The glandular area *c*, Fig. 81, strongly magnified. *a*, double layer of muscle fibres—the internal is circular, the outer is longitudinal; *b*, dilated glands; *c*, contents.

question whether this tissue represents the secretion of this glandular structure which is undergoing organization, or whether it is to be considered as an independent myxomatous tissue form.

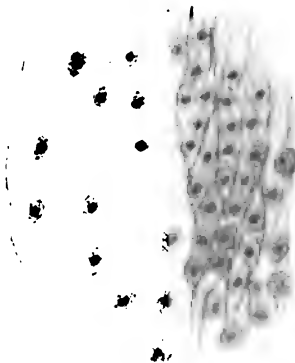


FIG. 84.—The contents *c*, Fig. 83. Cells with intercellular substance.

As is seen in Figs. 81 and 83, muscle fibres are present in all parts of this dermoid prominence, and they seem to undergo hypertrophy in the circumference of any dilating cystic struc-

ture, as may also be seen in the case of cyst *a*, Fig. 79. They are often arranged in one, two, or three layers.

At the base of the dermoid prominence is the area *b*, which is also surrounded by a muscle layer. On one side are seen the same tubules and glandular forms with beaker cells as we have observed in Fig. 82. The contents consist of a large amount of connective-tissue basis containing few pyramidal and spindle-shaped cells, and resemble myxomatous tissue.

At *k*, Fig. 81, is a glandular structure showing a lobular form and surrounded by connective tissue (Fig. 86).



FIG. 85.

FIG. 85.—Cells of Fig. 84 strongly magnified. Cells with double contour and large nucleus lying free in the contents.

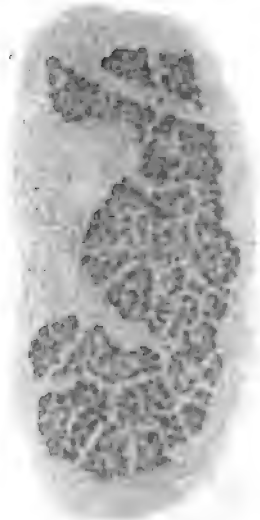


FIG. 86.

FIG. 86.—Glandular structure *k*, Fig. 81, resembling the thyroid gland, and described as such in dermoid cysts of the ovary by several authors.

In the ovarian tissue which forms the base of the prominence are dilated follicles and numerous follicles in a state of rest. The nearer we approach from the surface of the prominence to its base the less complicated are the glandular tubules, and entirely at its base is an area showing seven or eight transversely-cut ducts. Most of these are lined with a high cylindrical simple epithelium surrounded by connective-tissue fibres circularly arranged. One of these ducts has a star-shaped form, and the surface of the epithelia which line it shows a distinct membrane, but cilia cannot be found. It is probable that this duct as well as the others are remnants of

the Wolffian body, and that from these, or related to these, come all the other glandular structures in this prominence.

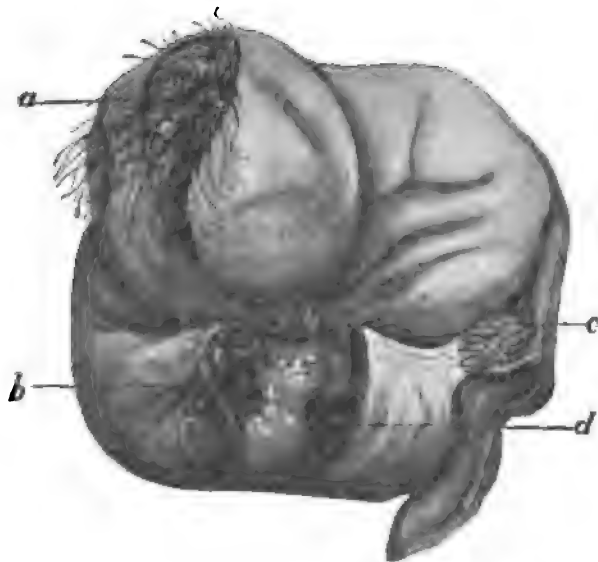


FIG. 87.—Combination tumor of Case 8, consisting of a dermoid cyst and a cystadenoma proliferum et myxomatodes. *a*, dermoid cyst; *b*, cystadenoma; *c*, tube with fimbrian end; *d*, see Fig. 92.

The wall of the dermoid cysts at a distance from the prominence consists of ovarian tissue containing corpora lutea and Graafian follicles. The inner lining consists of simple and



FIG. 88.—Section through the prominence (*a*) of the dermoid cyst Fig. 87, with separating wall and wall of cystadenoma (*b*), *a*, dermoid prominence; *b*, cystadenoma; *c*, separating wall with numerous vessels.

stratified epithelium, and is without doubt squamous epithelium.

The squamous epithelium which covers the prominence, in

passing over the base takes on the form of squamous epithelium, of granulation tissue, and also of ciliated epithelium (*i*, Fig. 81).

CASE VI.—One tumor is composed of a dermoid portion and a cystadenomatous portion. Fig. 88 shows a section through the dermoid prominence, and includes the dividing wall between the dermoid cyst and the cystadenoma.

The surface of the prominence is covered with squamous epithelium showing in parts a horny character. At one side the squamous epithelium passes over upon the ovarian base into the above-described granulation tissue. On the other side this



FIG. 89.

FIG. 89.—Thinnest part of the wall (lined with squamous epithelium) of the dermoid cyst *a*, Fig. 87.

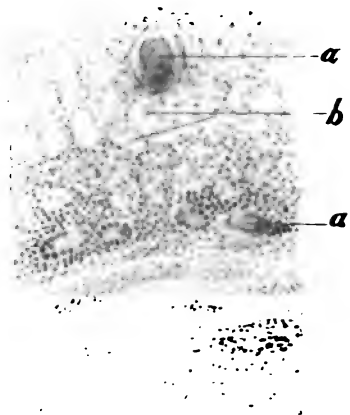


FIG. 90.

FIG. 90.—Thin wall of dermoid cyst *a*, Fig. 87, showing the so-called granulation tissue with giant cells. *a*, hairs in the wall; *b*, giant cells.

change into granulation tissue takes place at some distance from the prominence. Underneath are numerous sweat glands, sebaceous glands and hairs, a small piece of bone with a pulp-like centre, and a long piece of hyaline cartilage, as well as glandular structures lined with squamous epithelium. The wall between the dermoid prominence and the ovary contains numerous blood vessels, so that this portion of the ovary corresponds to the hilus with its large vessels. In the prominence lie, further, very large cells with large nuclei and pigment granula. On one side of the prominence the squamous epithelium changes to a stratified cylindrical epithelium of a papillary character and containing numerous beaker cells.

The dividing wall between the dermoid cyst and the cystadenoma consists of ovarian tissue with numerous blood vessels and corpora albicantia and small cysts of the same



FIG. 91.—Part of the dermoid prominence (a, Fig. 88). a, sebaceous glands; b, sweat glands; c, muscle bundles; d, transverse sections of hairs.

character as the cystadenoma itself. They show distinct projections, forming an arrangement like that in the *glands of Lieberkühn*, and are lined with a high cylindrical epithelium with the nucleus at the base, and contain numerous beaker cells.



FIG. 92.—Section through thick part of wall of cystadenoma.

Fig. 89 represents a section through the thinnest part of the wall of the dermoid cyst. Fig. 90 shows hairs which

have grown out of the prominence and have been surrounded by the so-called "granulation tissue" of the wall.

Near the point *a*, Fig. 88, and near the piece of cartilage, lies a spinal ganglion whose nerve fibres contain a finely granular pigment.

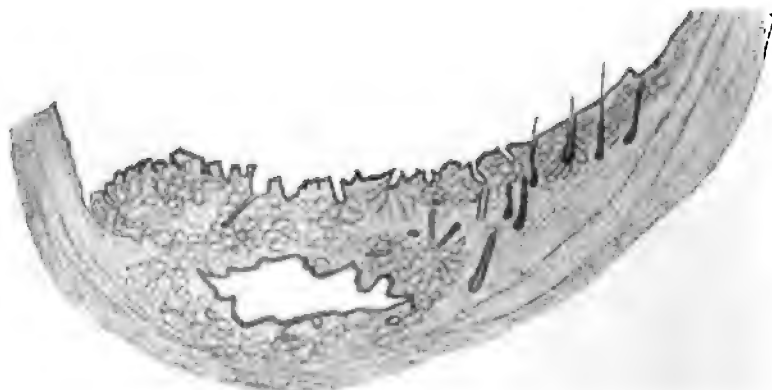


FIG. 93.—Dermoid prominence with broad base of Case 6; other ovary.

The ovary of the other side was changed into a small, thin-walled sac showing on its inner surface a dermoid prominence four centimetres long, three-quarters of a centimetre wide, and one-half of a centimetre high, forming a curve on the inner surface of the cyst, which made it impossible to include its en-

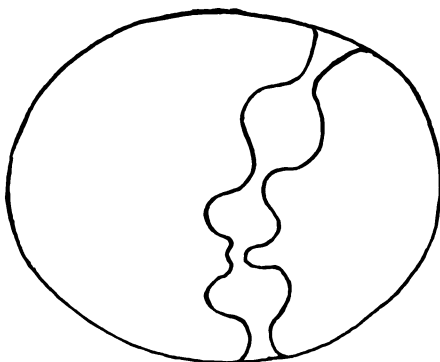


FIG. 94.—Schematic figure showing the arrangement of the three dermoid prominences in dermoid cyst Case 7.

tire length in any one section. This prominence is covered by squamous epithelium, which on one side passes over upon the ovarian base as a simple epithelium with beaker cells, and further on as a simple ciliated epithelium. The prominence

contains scarcely anything more than sebaceous glands, sweat glands, and numerous hairs. The latter are deeply pigmented. At many points are found smaller and larger areas of pigmented cells. With the exception of fat tissue, no mesodermal structures were found.

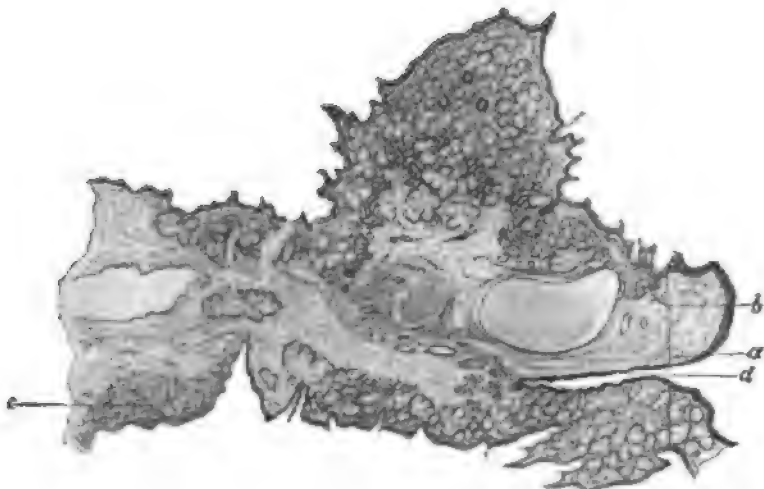


FIG. 95.—One of the three dermoid prominences of Case 7 with quill-like surface. *d*, depression of the surface lined with ciliated epithelium; *a*, glia tissue; *b*, cyst lined with cylindrical epithelium; *c*, area containing pigmented cells.

CASE VII.—Case 7 is a dermoid cyst of the right ovary and a thin-walled cyst, the size of a fist, of the left ovary.

The dermoid cyst shows on the inner surface two dermoid prominences united by a small round prominence, so that in

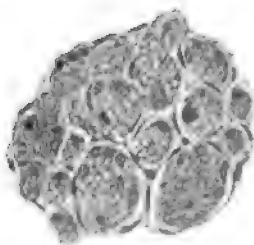


FIG. 96.—Pigmented area *c*, Fig. 95, by strong magnification, showing pigmented cells with nuclei.

fact three dermoid prominences are present, as is schematically shown in Fig. 94.

A section through the first dermoid prominence shows a covering of squamous epithelium with many thin projections of the surface, as may be seen in Fig. 95. They cover the

prominence as if with little quills, and even in the hardened and stained specimens their length is about 6 millimetres.

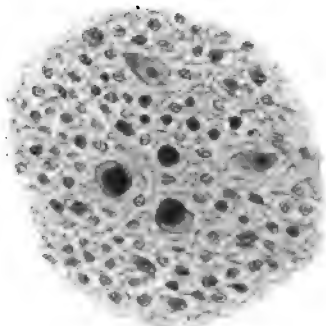


FIG. 97.—So-called glia tissue *a*, Fig. 95, strongly magnified.

Into these quills goes the connective tissue from the underlying substance, and at many points horny pearls are seen in

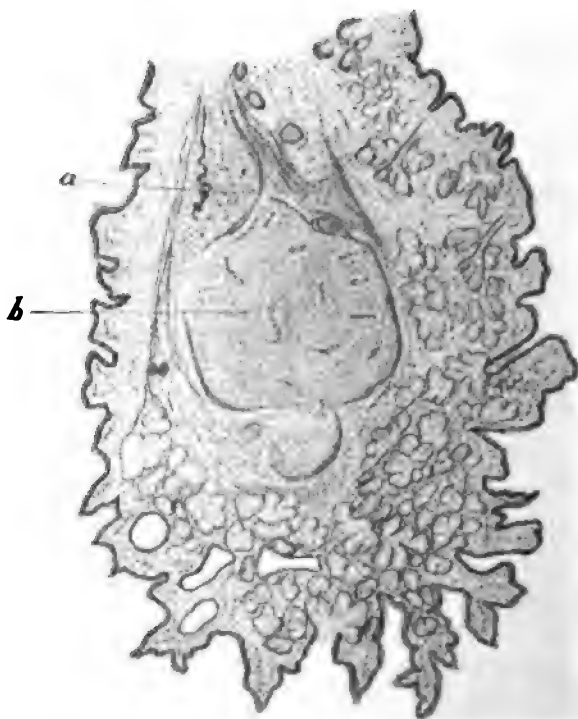


FIG. 98.—Second of the three dermoid prominences of Fig. 94.

them. It is probable that these structures form the basis for the production of nail-like or claw-like formations such as we

have seen in the specimens in the Pathological Institute in Vienna. There is further a huge growth of sebaceous glands, numerous hairs, sweat glands, fat, muscle fibres, a piece of bone with Haversian canals which in the stained specimen forms an oval 7 millimetres long and 5 millimetres wide. Around this bone, and extending up to the surface of the prominence, is a glia-like tissue (*a*, Fig. 95). It is of interest that at this point the surface is not covered with squamous epithelium, but that a depression is found (*d*) which is lined with ciliated cylindrical epithelium which sends little papillary projections into this depression. As may be observed, this

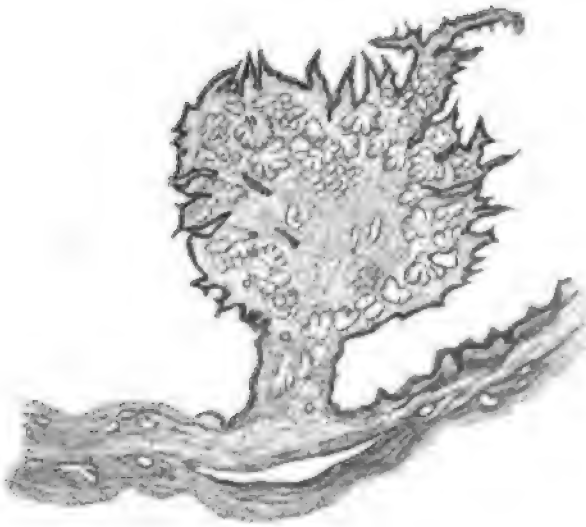


FIG. 99.—Third of the dermoid prominences of Case 7.

glia-like tissue reaches up to the ectodermal covering of the prominence. On one side of this glia tissue lies a cyst (*b*), the size of a pea, lined with cylindrical stratified epithelium, which likewise forms papillary projections. At the base of this prominence the squamous epithelial covering goes over as squamous epithelium, while on the other side the base is covered with a pigmented tissue consisting of large cells lying closely grouped and containing small nuclei, and surrounded by small-celled tissue (*c*, Fig. 95).

Under the cyst *b* lie several spinal ganglia such as were found in Fig. 88.

Because of the character of the cells pictured in Fig. 96,

I believe this area *c*, Fig. 95, must also be considered as nerve tissue.

The middle of the three prominences (Fig. 98) is covered with squamous epithelium, under which are numerous sebaceous and sweat glands. In the middle is a piece of bone (*b*), of irregular form, surrounded by a fibrous capsule. Under it



FIG. 100.—Dermoid cyst of the *left* ovary of Case 8, with a large piece of cutis-covered bone containing six *left* teeth.

is also glia tissue (*a*, Fig. 98), which is a continuation of the glia tissue *a*, Fig. 95. In this glia tissue is a series of irregular, long, closely grouped cells with dark nuclei, which are also present in Fig. 95. On closer examination this area shows glandular tubules and ducts lined with a single layer of epithelium. In the glia tissue are numerous capillaries and vessels filled with blood.

The surface of the third prominence (Fig. 99) consists of quills covered with squamous epithelium, under which are very numerous sebaceous and sweat glands. The substance of the prominence consists of fibrous connective tissue, fat, and small particles of young hyaline cartilage. On the one side the squamous epithelium passes over upon the base of the prominence as squamous epithelium; on the other side it changes into the previously mentioned granulation tissue.

CASE VIII.—The cyst has the size of a child's head, and was developed within the ligament, so that the ovary, as may be seen in Fig. 100, is retained as almost normal.

The contents consisted of the usual dermoid cheesy matter mixed with hair, and a large bunch of hair connected by a



FIG. 101.—The cutis covering the teeth-containing bone of Case 8. *a*, squamous epithelium with sweat and sebaceous glands; *b*, space containing and covering the bone; *c*, fat tissue and connective tissue, being the external cyst covering of the bone.

band of growing hairs to the cutis-like covering of the pictured piece of bone. The cutis covering of this piece of bone shows numerous dilated pores, and at its free end are eight teeth firmly fixed in alveoli. The largest portion of the interior of the cyst, as may be seen macroscopically, is lined with epidermis. A section through the ovary shows a small cystic degeneration. Part of the hilus ovarii goes over into the cyst wall. The tube with its fimbrian end was found to be almost normal.

The thinnest part of the wall consists of fibrillary connective tissue lined with a stratified so-called "granulation tissue." The thicker part of the wall consists of fibrillary and fat tissue lined within by squamous epithelium, under which are numer-

ous sebaceous and sweat glands and also hairs. The covering of the piece of bone shows a surface of squamous epithelium, and below it a thick layer of sebaceous and sweat glands, hairs, and some islands of cartilage. The deepest layer immediately over the bone consists of fibrillary tissue with few



FIG. 102.—Hygroma colli cysticum. *a*, glia tissue; *b*, glands lined with beaker cells; *c*, connective tissue and muscle layer surrounding *b* glands; *d*, cartilage; *e*, bone; *f*, myxomatous tissue and striated muscle fibres.

nuclei (Fig. 101). In none of the sections of the wall of this cyst, or in the covering of the bone, was any evidence of ovarian tissue found.

CASE IX.—This case, described as hygroma colli cysticum, contains the following products, which may be recognized in Fig. 102, and which are here described for comparison.

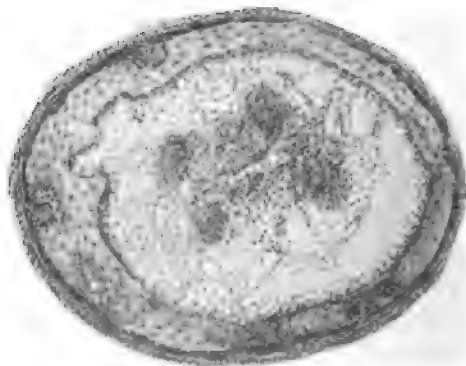


FIG. 103.—Bone *e*, Fig. 102.

The tissue *a*, Fig. 102, consists of a fibrillary or reticular basis containing numerous small round nuclei. A thorough comparison with the glia tissue seen in other specimens proves that we are dealing here with the same structure. In this tissue are found numerous smaller and larger glands or ducts lined with a single layer of epithelium. At *b*, Fig. 102, are

glands lined with a single layer of cylindrical epithelium showing cilia at certain points. This interesting area, containing so many various mesoderm substances, is surrounded by a rather thick layer of fibrous connective tissue (c) containing numerous capillaries and muscle fibres. In this mesoderm area are found further two pieces of hyaline cartilage (d), which are both surrounded by fibrous connective tissue. There is also a piece of bone (e) which is drawn in Fig. 103. Around this piece of bone is a myxomatous fatty tissue containing round and spindle-shaped cells in which are numerous striated muscle fibres with nuclei. At other points the striation of these muscle fibres is seen distinctly in longitudinal sections. Further are seen numerous glands which are lined with a single layer of high epithelium showing numerous beaker cells.

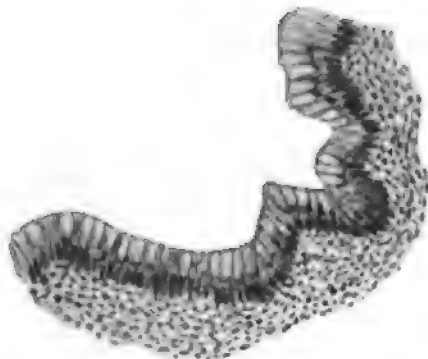


FIG. 104.—Gland with beaker cells from Fig. 103, b.

At several points ciliated epithelium is found as the lining of these glandular structures. Around them are found individual glands or groups of glands lying in a round-celled tissue. There were also found structures lined with epithelium resembling squamous epithelium. In some of the various glandular structures, especially in those containing beaker cells, are found round cells with distinct nuclei which resemble the cells found in Fig. 85.

Case 9 serves as a proof that mixed tumors at other points may contain the same tissues and the same glandular structures as are found in dermoid cysts of the ovary and testicle.

(To be concluded.)

TRANSACTIONS OF THE SECTION ON
GYNECOLOGY OF THE COLLEGE OF
PHYSICIANS OF PHILADELPHIA.

Meeting of February 21, 1901.

DR. JOHN C. DA COSTA *in the Chair.*

EXHIBITION OF A SPECIMEN OF PRIMARY TUBERCULOSIS OF
THE FALLOPIAN TUBES, REMOVED BY HYSTERECTOMY.

DR. JOHN B. SHOBER.—The specimen was removed by hysterectomy from a patient on Monday last, and is of interest owing to the complication of pathological disorders which it presents. I found, upon opening the abdomen, that there was a general tubercular peritonitis. The omentum and intestines were adherent to the parietal peritoneum generally, and it was necessary to release these adhesions before I could arrive at the site of operation. There was found a large monolocular cyst of the right ovary; also pyosalpinx of both tubes, general adhesions and a large fibroid of the uterus, and a fibroid nodule occupying the left side of the pelvis. The specimen is interesting on account of the complication. The patient has been convalescent for four days with no interruption.

DR. JOHN B. SHOBER presented a paper on

VARICOCELE OF THE BROAD LIGAMENT.¹

DR. E. E. MONTGOMERY.—I do not know that I can add anything to the description which is given of this condition, which in my experience is a rare one, having seen but one patient in whom there was a varicose condition of the broad ligament. In that case the whole posterior fornix of the vagina was a network of varicose veins. There was no marked disease of the ovaries and tubes. The uterus was normal in size, and there were no pelvic adhesions. The vessels, however, were as large as the thumb. A number of ligatures were applied upon the vessels in the pelvis, with the relief of the condition. It was some time, however, before the patient was entirely relieved, for the reason that the operation was done at the Jefferson Hospital, where the condition of the wards was very bad, and infection occurred. I, unfortunately, used silk instead of catgut, and was troubled with the ligatures for a long time afterward. The patient recovered.

DR. SHOBER (closing).—I have nothing to add, except that I

¹ See original article, p. 664.

had hoped to hear something from the members of the best way of dealing with the varicocele. It is a rare condition, but that it does occur sometimes is well known. It may be necessary to remove the ovaries and tubes with the varicocele; or it may be possible to ligate these veins without disturbing the broad ligament, or, if it should be ligated, to sew it together again.

DR. WILMER KRUSEN read a paper on

OVIARTOTOMY IN THE EIGHTIETH YEAR.¹

DR. E. E. MONTGOMERY.—Operations in advanced age are always looked upon with uncertainty, yet these cases seem to do about as well, when the women are in a fair condition, as in younger patients. I have never done ovariectomy on a woman over 70 years of age. I have done hysterectomy in a woman of 81. She stood the operation well and was able to return to her home. She died, however, from a return of the disease. The uterus at this time was in a state of malignant degeneration. She had been curetted only a few weeks before I saw her. The curette perforated the wall of the uterus, and there was an abscess in the abdomen, shut off by peritoneal adhesions, so that the peritoneal cavity was involved before I had an opportunity to operate. I have a patient now at the Jefferson Hospital who underwent operation ten days ago for removal of the vulva for cancer. She is 78 years old, but has shown no more shock and discomfort following the operation than any other patient in the wards.

DR. KRUSEN (closing).—One point which particularly interested me in the case was the length of time which the patient had been conscious of the presence of the tumor. It was twenty-six years from the time of first noticing it. The symptoms had been slight, and the growth must necessarily have been very slow.

DR. H. D. BEYEA read a paper on

THE OCCURRENCE OF FIBROID TUMORS IN FOUR SISTERS,
MOTHER, GRANDMOTHER, AND AUNT.

DR. E. E. MONTGOMERY.—When we remember the fact that thirty per cent of all women who reach the age of 30 years have fibroid tumors, we do not require the hereditary predisposition to find four females in one family with fibroid tumors. I have not had any experience which would lead me to believe in hereditary predisposition to these growths.

DR. JOHN G. CLARK.—I think that in tumors of the female genital tract there is little in the way of heredity.

Our German brothers are inclined to bring out new theories for diseases, and lately they have announced that fibroid tumors are due possibly to cardiac lesions. They describe a condition found as "myoma heart," in which the heart is somewhat weakened, and they attribute many of the sud-

¹ See original article, p. 660.

den deaths following myomatous degenerations to cardiac affections. There is some question, I think, of the relation of cause and effect—whether the heart is weak because of the myomatous condition, or whether the myoma has arisen because of the cardiac condition. I feel, in a general way, that heredity is not of any great value in coming to a definite conclusion as to the origin and etiology of these tumors.

DR. JOHN B. DEEVER presented a paper on

THREE DANGEROUS OPERATIONS—REPAIR OF A LACERATED CERVIX, DILATATION, AND CURETTEMENT.

The paper is a protest against the indiscriminate use and the abuse of three operations which in themselves are excellent procedures and capable of accomplishing much good, but which are often performed without due deliberation and knowledge of the indications and contraindications.

A lacerated cervix in women who have borne children is so common that it may be considered as more of a normal than pathological condition. In the absence of special indications, such a cervix had better be let alone. If, however, a lacerated cervix be extensive enough to permit gaping of the edges and consequent exposure of the cervical mucous membrane to injury, or if ulceration be present, or if the scar tissue is hard and in excessive amount, or if any of these conditions give rise to subinvolution or marked reflex symptoms, then operation is indicated. If, in addition to any of the above conditions, there is a history of hereditary tendencies toward malignancy, we have the strongest indication for operation. A patient with a family history of carcinoma, presenting the above conditions, should be operated upon at the earliest possible moment; and this should be repeated after subsequent labors, if the cervix be again torn, as it is likely to be. As strong as these indications are for operative interference, we are not justified in instituting them unless there is freedom from all pelvic inflammatory processes or their results. Salpingitis, pyosalpinx, or adhesions offer strong contraindications. Under these circumstances, abdominal section for the correction of the intra-abdominal trouble should follow immediately the repairing of the lacerated cervix. If the cicatricial tissue in a lacerated cervix involve the supravaginal cervix, it may be sometimes impossible to remove it entirely, except by high amputation of the cervix with freeing of the bladder and rectum; if under these circumstances there is a history of a hereditary tendency to malignancy, or if the patient be near or undergoing the menopause, vaginal hysterectomy may be considered the more rational procedure.

In the presence of endometritis, great care must be exercised to prepare the endometrium, if this be possible prior to the narrowing of the cervical canal, so as to provide adequate drainage—or, in other words, to decrease the discharge so that the new and narrow canal will carry it off.

Equally as important is it to carry out every aseptic detail

during the operation and antiseptic preparation of the field of operation, in any one of the three operations under discussion, as it is in any in the realm of surgery.

That these operations are capable of converting a latent salpingitis into an active one every abdominal surgeon of experience can testify. It can be brought about in one of several ways: first, and most important, by the introduction of sepsis through instruments or intrauterine douching, or the spread of sepsis from an infected uterine cavity, or by the breaking up of periuterine adhesions, liberating septic foci which have been imprisoned.

Adhesions can be torn by bringing the uterus down to the vulvar orifice; the tenaculum should only be used to steady the uterus, and not to make traction during dilatation or repairing of the cervix.

Washing out the uterus, except in septic conditions, also plugging the uterine cavity with iodoform gauze, I regard as vicious practices, which in themselves are too often capable of exciting inflammation in the Fallopian tubes. Even in septic conditions of the interior of the uterus the intrauterine douche should be very carefully done, and the packing introduced for the purpose of drainage, and not to its exclusion.

Curettement of the uterine canal is a dangerous operation, and one which calls for great delicacy of touch and the most rigid observance of aseptic and antiseptic details. The indications for its performance are positive, although one should never forget the contraindications.

The indications are for the correction of septic conditions of the cavity of the uterus, both acute and chronic. In the acute form of endometritis, which is post-puerperal infection as a rule, we curette with propriety to remove retained foreign matter; we must beware of the great danger of uterine perforation—an accident which can and does happen with the most startling ease. In chronic endometritis, the persistence of the disease, and the constant danger of tubal infection and peritonitis, or lymphatic infection and peritonitis, make curettement an operation of wisdom in many cases. We should, however, have in mind the likelihood of the lighting-up of a latent salpingitis or latent sepsis in some other locality, and be prepared to complete the operation by removal of the foci of pelvic inflammation.

If the discharge arising from an endometritis shows the presence of gonococci, curettement is positively contraindicated, for it is certain that such a procedure will most probably light up an active gonorrhea which shows marked tendencies to spreading and consequent tubal involvement.

When the indications for curettement are established, then the operation should be done with an intelligent thoroughness which will leave no portion of the cavity untouched by the curette.

In advanced carcinoma of the cervix, where other and more radical measures are impossible, curettement followed by the

application of the cautery is indicated and will lessen the patient's discomfort.

Flexions of the uterus combined with endometritis in the absence of adhesions indicate dilatation followed by curettement.

Dilatation of the cervical canal is an operation which offers a fruitful field for the ambitious surgeon. It is devoid of cutting and is practically bloodless, and therefore appeals to a patient. If it was not so dangerous and inefficient I might be induced to sanction it and perform it more often than I do. Recently America's greatest gynecologist said to me that a dilatation of a cervix caused him greater anxiety for the first days following an operation than would a bad pus section or hysterectomy.

Slow dilatation by sponge tents, even though protected by a sterilized rubber cot or by gauze or sponge packing, offers no advantages over divulsion and is attended by much greater risks of sepsis. I would especially condemn the attempts—and I say attempts advisedly—to dilatation in the physician's office, as it is a most dangerous and useless practice. Divulsion should never be done except under complete anesthesia and with the most rigid observance of aseptic and antiseptic precautions. Antiseptic preparation of the vagina is as important here as it is for a vaginal hysterectomy; the vulva should be shaved, and the vulva and vagina, after preparation, should be protected by iodoform or sterile gauze. The operator and all assistants and nurses should wear sterile rubber gloves.

Dilatation is indicated in dysmenorrhea due to cervical stenosis, as a preliminary step to curettement when there is a displacement of the uterus which is not adherent, and when there is an absence of pelvic or tubal inflammation, either active or latent.

Divulsion for stenosis of the cervix is at best an unsatisfactory measure, as it frequently fails to meet and overcome the condition. It is often necessary to repeat the operation several times before relief is afforded. After the first divulsion, in addition to the stenosis, we have the rigid scar tissue to deal with, and here it is comparatively easy to lacerate the cervix.

Frequently relief is not experienced at the first menstrual period following the operation; so that we should not be too hasty in repeating the measure, but should wait until the evidence of failure is positive.

Dilatation as a method for the correction of flexions of the uterus must be classed among the surgical failures; I have never been able to satisfy myself that it has accomplished the slightest bit of good.

The recognition of one condition—an infantile uterus in a woman suffering from dysmenorrhea—will or should demonstrate the futility of attempting to restore a cervical canal by dilatation in an organ which is congenitally defec-

tive. Operation under such circumstances is always attended by failure, because the source of the trouble is the result of the abnormality of the uterus itself or in conjunction with its adnexa. This is also true of the other congenital malformations of the uterus, viz., the bicornate uterus, etc.

DR. GEORGE ERETY SHOEMAKER.—The points are all those of common experience among surgeons. The one which I think requires special emphasis is in regard to dilatation and curettage in the physician's office. If there is one abuse above another which is responsible for trouble among women, it is that procedure, and at the present day I believe it is highly reprehensible, because dangerous and unnecessary, to curette or dilate under circumstances which preclude the proper sterilization of the field. Large numbers of cases of invalidism and peritonitis follow that custom, and yet time after time those who work in hospitals see cases in which that procedure has been carried out.

DR. E. E. MONTGOMERY.—The greater portion of the paper I can heartily agree with. One great reason why these operations are attended with bad results is that they seem simple, and those who have not had the habit of surgical cleanliness, which has been spoken of, essay these operations. I individually feel that one cannot observe too great care in cleanliness and in the preparation of a patient for an operation of dilatation and curettement. The dilatation and curettement of the uterus in one's office I should regard as a crime. I should feel the greatest anxiety about a patient who was permitted to get up within a week after such an operation had been done.

In regard to the dilatation for exploration in case of cancer or fibroid growth in the uterine cavity, I do not think any method is equal to the laminaria tent. In the use of this it is important that the most careful antiseptic and aseptic measures be taken. The dilatation favors the ability to introduce the finger, and the exploration of the cavity is more satisfactory than will be the examination of any scrapings which may be obtained from the uterus.

I fully agree as to the wisdom of making an abdominal operation an absolute *sine qua non* in any case in which there are inflammatory conditions about the uterus. I should feel that to curette the uterus where there were inflammatory conditions, without opening the abdomen and treating the conditions, would be to invite disaster.

The operation for laceration of the cervix is one which is performed much more rarely to-day than a few years ago. The methods of antisepsis and asepsis in obstetrics decrease the effects of this lesion. The conditions which we have to treat to-day are rather those of partial lesion of the cervix, in which the uterine cavity stands open, with a certain amount of eversion of the mucous membrane and hypertrophy of the structure, and in which amputation of the cervix is preferable to the Emmet operation. I was impressed with a remark by Dr. Emmet this winter, when he came on to hold a clinic for me,

that he very rarely found cases in which it was necessary to do the operation he had devised.

I fully agree as to the importance of every precaution in these cases. The reason we had trouble in the old cases of operation on lacerated cervix was that the increased secretion had difficulty in getting out of the uterus through the small canal. Dilatation of the uterine cavity and of the orifices of the tubes resulted, so that we had the most favorable condition for extension of inflammation from the uterus into the tubes.

I do not say that the cases which were formerly subjected to operation for laceration of the cervix should not be considered as requiring operation at all. I question also as to the matter of operating as in cancer of the uterus. If the operation is required, I should do it without any reference to the hereditary tendency. I believe very little in this from my own experience.

DR. B. C. HIRST.—I have little to say about Dr. Deaver's paper, which is, I imagine, addressed more to the general practitioner than to the specially trained surgeon in gynecology.

I would differ with him in several statements. In regard to a vaginal hysterectomy for a tear of the vaginal vault, I do not think that gynecologists would agree with him that an extensive tear in this locality is an indication for vaginal hysterectomy. I also could not understand why he should be disinclined to use the intrauterine douche. If given properly, there is not the slightest risk from it.

I understood Dr. Montgomery to say that he preferred the digital examination of the uterine cavity to a microscopical examination of scrapings. This is a statement with which, I think, we cannot all agree. I have had a very satisfactory experience with microscopical examinations of the endometrium, and have the greatest confidence in the ability of certain trained examiners in this work to make a correct diagnosis. I have watched a number of cases studied by competent men, and I cannot recall one in which the microscopical findings proved to be a mistake. It depends, of course, upon the microscopist. Not many men in this large community are capable of doing the work correctly. There are, however, I think, a few who can be relied upon to give a correct opinion.

There is one point I wish to make for myself in regard to operations on lacerations of the cervix. I have come to the conclusion that the primary operation on lacerations of the cervix, strictly speaking, is not warrantable. One cannot get a sufficiently large proportion of successful results to make it worth while. I have found, however, that at the end of two weeks the involution of the cervix is sufficient to allow of a certain success in the repair of any injury that may have happened to it. So it is an interesting question, I think, whether many of these injuries ought not to be repaired before the woman's puerperal convalescence is complete. I think there is no doubt as to the answer to that question in well-

equipped institutions. Personally, in the hospitals under my charge I do not propose to let any woman leave with an injury from childbirth, whether recent or remote, if she will consent to its repair. If the cervix is badly torn it should be repaired at the end of two weeks. Injuries to the perineum, as we all know, can be repaired at once. In making my routine examination of injuries of the cervix, I find cases in which there are remarkable changes in the two weeks; often cases which looked very bad at first, at the end of two weeks would not warrant operative interference. There still remain conditions, however, at the end of this period, that will be likely in the future to give trouble. In such cases, if the surroundings are favorable and if the equipment possessed by the physician is good, I think better results would be secured in the future by treating the cervix as we treat the perineum. The only difference is that the repair of the cervix is postponed to the end of two weeks, while that of the perineum is done immediately.

DR. JOHN G. CLARK.—My experience is exactly along the line of that of Dr. Hirst, that the microscopical examination of the scrapings is a valuable aid in diagnosis. If a mistake is made it is not owing to the method, but is the fault of the brain behind the microscope. If we depend upon the clinical side of the question we may take out a uterus which should by no means come out. I have followed this line of work for the last six or seven years, and the more I see of it the more convinced I am of the diagnostic value of curettage. I do feel, however, that the value depends largely upon the man who does the work. I remember two or three years ago an instance of a man who had taken a thorough course in microscopy and in pathology, who also went abroad and studied under Pick and Dilatante. Shortly after coming back I saw one specimen under his microscope which he had diagnosed malignant adenosarcoma. It was as simple a case of dilatation of the glands of the uterus as one could ask to see. Examinations by such a man as this are infinitely worse than those made by clinical data. In this question of diagnostic curettage a special form of pathology is involved. Many a man who in general is a good pathologist will promptly make mistakes in this special field. In gonorrhea and in growths of the mucous membrane we see changes in glands which look much of a carcinomatous nature. Nevertheless the skilled man will be conservative in diagnosis, and, if the diagnosis is so difficult to make, the patient may with safety wait and have another curettage. I would much prefer the second curettage for this absolute settling of the diagnosis than losing the uterus under circumstances which did not warrant its removal.

Other cases in which dilatation is dangerous, and to which Dr. Deaver has not called attention, are those of married women with a persistent discharge—women who have not been perfectly virtuous. Curettage will infect such patients, and they should be most carefully looked into before attempting an operation.

Then, again, we know that these operations of the minor type are much abused; men do these operations who are not capable of making a diagnosis within the pelvis. I think this is the experience of every man who sees these cases frequently.

It is the experience of every man that on careful diagnosis he will find some grave condition, the result of this laceration. I agree, however, as to the gravity and danger of resorting to this operation indiscriminately. I would lay special stress upon the careful study of these cases when there is suspicion of carcinoma; upon the dangers of curettage in cases with gonorrheal history, and against curetting in a general way without making first a very careful diagnosis of the case. I have noticed time and time again, as you call students to make a diagnosis in a case of laceration of the cervix, that if you have not laid special stress upon the inadvisability of operating, eight out of ten will say the case should be operated upon. If in the country at large the tendency is to take this view, we must feel that a good deal of unnecessary work of this type is being done.

DR. GEORGE M. BOYD.—I consider Dr. Deaver's paper very valuable in the stress which he lays upon the care which we should exercise in the operations which he enumerates. I indorse what Dr. Shoemaker says in regard to the condemnation of office dilatation and curetting sometimes resorted to, and of the importance of making careful examinations of the abdominal and pelvic organs before these measures are resorted to.

The paper is also valuable in the sense that it is directed chiefly to the general practitioner and is one that will do a great deal of good.

DR. JOHN H. GIRVIN.—I think Dr. Deaver has laid the proper stress on the dangers, but a word might be added as to the difficulties of these various operations, particularly for the general practitioner. I think any one who sees a good many of these cases brought to the hospital will realize that curettement is not a simple operation from the standpoint of procuring a cure of the symptoms. We very frequently see cases that have been curetted time and again. Cases that have been curetted by men who are not specialists and not doing much of that work will almost always need two or three curettements before the desired result is accomplished. I think the same may be said about the repair of a lacerated cervix, but possibly to a less degree.

It seems to me the fault with a great many dilatations is that they are not properly done. The symptoms are not relieved because the technique of operation is not properly carried out and not enough time is consumed in the operation.

The difficulty and importance of securing a proper specimen for microscopic diagnosis should also be emphasized.

DR. JOHN C. DA COSTA.—I am glad to hear Dr. Deaver speak so emphatically on these matters, and hope the general practitioner, for whom it is intimated that the paper is written,

will read and profit by it; but this I doubt very much. These operations seem so easy to do that they are done too frequently. Too many office operations are done, and the wonder is that more harm is not done.

I do not agree entirely with Dr. Deaver in regard to amputations and trachelorrhaphy. A good many trachelorrhaphies are done when amputation of the cervix ought to be done. Unless a man understands his business he will often mistake an ectropion for laceration. I see no reason why trachelorrhaphy should not be done when the tear does extend into the vagina as when it does not so extend.

With regard to packing the uterus after dilatation, I have found that packing it with sterile gauze not only drains but stimulates the uterus to contraction. Then, too, the gauze takes up in its meshes any little fragments of tissue which may not have been gotten out. As to washing out the uterus, I see no reason why it should not be washed out as well as any other open wound.

With reference to the danger of dilatations, every operation is dangerous if done by men who do not understand their business, but in the hands of a *trained* man there is little or no danger in dilatation. A man of any sense would not dilate the uterus if he found pyosalpinx or enlarged tubes, unless he were prepared to open the abdomen and remove the offending organs.

Dr. Deaver says that dilatation for ante flexion is useless. Let me state one case. The woman had been married seven years and never pregnant. She was worn down with suffering; her menstruation was a week of agony. I dilated and curetted her for a sharp ante flexion. Upon meeting her two or three months afterward I absolutely did not recognize her. She had gained twenty-five or thirty pounds. Menstruation was full and painless, and in fourteen months afterward I confined her of a big girl. This is only one of several cases.

DR. DEAVER (closing).—The paper has served its purpose. Of course it was not written for the trained gynecologist, and the full discussion which it has received makes me feel warranted in having presented it to this Section.

There were two or three points brought out with which I do not agree. For instance, in the element of heredity in carcinoma. I believe that in many of these cases traumatism is the exciting cause, but I am a strong believer in heredity. I am equally a strong believer in the importance of early and positive interference in any condition of suspicious malignancy in women whose mother or grandmother has died of carcinoma of the uterus.

I take exception to the douching of the uterus as after an ordinary dilatation and curettement. I believe there is an element of risk in the routine douching.

As to the diagnostic value of curettage, with all due regard for what has been said on this, I still believe more fully in the trained clinical observation in making a diagnosis.

I believe a laminaria tent would be safe in Dr. Montgomery's hand, but with the indiscriminate use of this I believe much harm would result.

As to the curability of flexions by dilatation, of course there are exceptions, but in the majority of instances I do not think much is accomplished.

DR. JOHN H. GIRVIN presented

A CASE OF INFECTIVE FEVER RESULTING IN PREMATURE LABOR, PERITONITIS, AND DEATH.¹

DR. GEORGE M. BOYD.—I agree with the writer of the paper in his conclusions; it seems to me that this was an ovarian abscess, possibly gonorrheal in origin, which had existed for some time, and the pregnancy had rekindled the latent trouble and developed the symptoms of infection prior to her delivery at term.

DR. GEORGE ERETY SHOEMAKER.—I first saw this woman a few hours before death, ten days after labor, and when she was practically dying. The question whether it would at any time have been helpful or wise to operate is a difficult one to decide, as no gynecologist saw her till very late. The temperature when she was admitted to another department of the hospital was 105°, and this before her labor. The lung symptoms were not favorable for operation under any circumstances. The ovarian abscess which was found at autopsy was evidently old and was small. It never could have been as large as an egg. It was my impression that this was the source of the sepsis existing prior to labor. A labor supervening upon a septic condition, with already infected kidneys, is a very unfavorable incident, and abdominal section under these conditions would almost certainly have been hopeless, even if done as soon as the child was delivered.

DR. GWYN.—Dr. Musser asked me to say a few words about this case. He was unable to find any definite symptoms of pneumonia. There was, as the history says, slight dulness at both bases, but never any tubular breathing. There were a few crepitations. The general appearance of the patient was more that of some severe infection, and the question of typhoid fever was first considered. There was no definite abdominal pain until after the delivery, except the pains which had occurred for eighteen hours before delivery, accompanied by hemorrhage. After delivery the pain was localized in the left iliac region. For some days after labor the temperature persisted. Until the occurrence of local symptoms we thought the condition was most likely some general infection. The history of gonorrhea in the husband was looked upon as being suggestive of the possible origin. Catheterized specimens of urine were reported as showing but very small amounts of pus.

DR. JOHN B. DEEVER.—I look upon the case as one of clear septic peritonitis. I believe that even if as much time had been

¹ See original article, p. 669.

spent upon the abdominal cavity as upon the examinations of the patient's blood the result could not have been different.

DR. EDWARD P. DAVIS.—In reviewing the history of Dr. Girvin's case I am led to the conclusion that the original infection was of the urinary tract. The comparatively healthy condition of the generative organs, the general peritoneal infection, and the lesions found in the kidneys point to this conclusion.

His case tallies well with one under observation some years ago at the Jefferson Maternity. A young woman in the pregnant condition and suffering from acute gonorrhea was admitted shortly before confinement. After labor she slowly developed a septic process which could not be referred to the generative organs. It was evident that the kidneys were infected, as the urine contained pus and acute cystitis could be eliminated from the diagnosis. She died of pyemia, and autopsy showed both kidneys to be infected with multiple foci of pus formation. The generative organs were comparatively healthy.

In such a case the occurrence of labor is followed by general peritoneal infection. This has been observed by others, and we must believe that the mechanical disturbance of labor often lights up to acute infection a chronic process which has become latent.

So far as treatment is concerned in these cases, it is questionable whether operation could avail. The removal of a kidney in a patient already suffering from peritoneal infection would probably be followed by death. Incision and drainage of such kidneys might in some cases be permissible.

DR. GIRVIN (closing).—There was no question of there being finally a general peritonitis, but the symptoms of that peritonitis did not develop until the last few days. She was distinctly without symptoms of peritonitis for the first week after her labor.

I had hoped there would be some discussion on the probable condition of the kidneys at the time of labor, as it was evidently an older infection than the infection of the pelvis. There was also the presence of the streptococcus in the kidney infection and not in the infection of the tubes and general peritoneal cavity, where the colon bacillus seemed to be the cause. I think there was septic infection unquestionably, but whether there was septic infection before the case came into the hospital, and whether this produced the premature labor, is another question, difficult to determine.

DR. J. M. BALDY read a paper on

RESULTS OF TREATMENT OF CANCER OF THE CERVIX, AND THE UNRELIABILITY OF STATISTICS ON THE SAME.¹

DR. J. B. DEEVER.—My experience tallies with that of Dr. Baldy. I regard cancer of the cervix as one of the most disastrous conditions which befall women. The earlier these

¹ See original article, p. 607.

cases are seen the better is the prognosis from the standpoint of treatment. My practice is to employ very radical surgery—by the abdominal route—only in the early cases. I liken this condition to a similar condition of the breast at this stage. It is useless in the latter cases to perform the radical operation when the glands as far as the clavicle have become enlarged. I do the radical operation when I believe the condition to be an adenocarcinoma. If there is any doubt I remove the growth, when, if it proves an adenocarcinoma, the radical operation is advised.

I have succeeded in some instances in removing the glands along the iliac vessels in uterine carcinoma. There are but few cures of carcinoma of the cervix, and therefore I can indorse Dr. Baldy's statements as far as my personal experience in this matter is concerned.

DR. GEORGE ERETY SHOEMAKER.—I think the general attitude of the profession is one of indorsement of the general view that there are in a great many cases of operated carcinoma of the cervix recurrences sooner or later, even though several years may first elapse. The lesson, however, is not that we should abandon the effort to operate on these cases, but that we should urge upon men who have an opportunity to see them early to send the cases earlier to the operation table. How few cases do we see which are early! I see ten cases of advanced carcinoma to one which is in its initial stage. A change will come only when men shall give up the old idea which has been in the text books that one must wait until there are pronounced cachexia, emaciation, hemorrhage, and odor before a diagnosis of carcinoma can be made. Abnormal hemorrhage alone should call for investigation, but investigation need not mean hysterectomy.

DR. EDWARD P. DAVIS.—There is one aspect of malignant disease of the womb which has not been mentioned—that of carcinoma or epithelioma arising from the chorion or syncytium. In most of these cases there is given a history of incomplete abortion, the malignant disease develops gradually, the uterus is enlarged and evidently the site of disease. In a few cases the womb remains unaltered, but the malignant growth spreads by metastasis so rapidly through the body that nothing can be done to stay its progress. A case of this sort came under my observation recently, in which autopsy showed malignant tumors in the brain, liver, kidneys, spleen, and lungs, while the uterus was unaltered. The patient had pernicious nausea in early pregnancy, and it was necessary to perform therapeutic abortion. This was followed by no improvement, but by progressive failure and death.

In cases where the uterus is enlarged, with a foul discharge and a history of incomplete abortion, the womb should be thoroughly emptied and a septic process excluded. After this, if the patient's symptoms do not promptly subside and malignancy is evidently present, vaginal extirpation of the uterus is necessary.

DR. JOHN G. CLARK.—The results of operation for cancer of the uterus are, at best, unsatisfactory at the present time. We know, however, that there is a very definite percentage of cures resulting from operative treatment, and that so far no other plan of treatment which has been suggested is as satisfactory. While none of us can be too optimistic with regard to the treatment of cancer along operative lines, yet I feel that Dr. Baldy has taken too pessimistic an attitude on this subject. In the first place, he has generalized in his criticisms without coming down to definite statistics. Certainly, in a vital matter of this kind, generalizations are dangerous, for it is the absolute statistics which we seek in order to definitely determine the value of operative treatment. The cases should be followed from the beginning to the end, from the time of operation until the patient is well beyond the period when we consider that she is healed, or when she has succumbed to the progress of the disease. In this way only can we definitely define the value of treatment.

Dr. Baldy also criticises the German reports. On this again I am inclined to take exception, for the statistics from many of the German clinics are above reproach. If there is one thing in which the German excels it is his careful statistical studies. Only recently Winter, of Königsberg, one of the most scientific of German gynecologists, has given us a splendid statistical review of cases, not only collected from the literature, but also those, which are infinitely more valuable, from his own personal observations. In the latter he has personally examined a large percentage of the cases, and only when the statistics were beyond question has he incorporated them in this report. These results show a large percentage of cures in cancer of the fundus and a very definite percentage of cures in cancer of the cervix. As this article is very comprehensive, I shall hope in the near future to review it *in extenso*; suffice it to say that with the exception, perhaps, of Cullen's very careful review of a series of cases, no American report is equal to it. These cases are extremely satisfactory, for they have been examined clinically, the diagnosis usually controlled by microscopic examination, which, from the ultimate diagnostic standpoint, is the court of last resort. Clinical evidences of cancer certainly, so far as symptoms go, are often very vague or absent. Even in cases where the clinical symptoms of cancer are present we are often utterly unable to arrive at a definite diagnosis, and this end is only reached by microscopic examination.

DR. JOHN C. DA COSTA.—My ideas are much in accord with the gentlemen who have spoken to-night, but I feel that if the percentage of cures is only ten, or even five, those cases are inevitably doomed without operation, and that it is much better that we should save that five or ten per cent than let them die. I know that I have cured cases of cancer of the cervix, but I have had the cases at the beginning. One case, operated on sixteen years ago, is well to-day. At the begin-

ning a cancer can be cured, but after the glands are involved I believe that a radical operation is of no more value than in cancer of the breast when the glands are extensively involved. It is merely palliative, and other palliative operations, much less dangerous than the radical one, can be done.

DR. BALDY (closing).—Cancer of the cervix will inevitably cause death unless something is done, and every patient saved is so much gained. I am in hearty accord that surgery is the only thing to consider with cancer in any part of the body. It isn't the fact of operation on cancer that I speak against; it is the abominable teaching of the day which is turning us back to the middle ages in this matter. These statistics of Winter quoted by Dr. Clark are exactly like those of Johns Hopkins and my own, and, when read between lines, fully sustain my position as to the unreliability of all statistics. All statistics on this subject are put together to prove the large number of cases the individual operator saves, and are made to present the best appearance possible. I have shown you how the statistics from Johns Hopkins show an apparent saving of over 20 per cent of cases of cancer coming to that institution, and have pointed out to you in detail in my short paper how in reality they prove that Johns Hopkins Hospital saves less than 5 per cent of all cases applying. The same test applied to these statistics of Winter shows the same thing. My own experience fits exactly with theirs. The facts are the same from all honest men; the only difference is in the conclusions drawn and the teaching which follows. I hold that any teaching which says that more than 5 per cent of cases of cancer of the cervix are saved is bad. Why, you ask? Because it gives the general practitioner a false sense of security; it deceives him as to his terrible responsibility in making an early diagnosis. The more he is impressed with the terror of this disease the more carefully he will scrutinize his cases and will arrive at an early diagnosis, and will insist on an early consultation and operation even in suspicious cases. Before you can use your microscope, cancer must be suspected. If the general practitioner, who sees these cases first, is not thoroughly educated to make a diagnosis clinically, to recognize the early symptoms and their comparative significance and consider them carefully, we are never going to make any advance. The teaching of the laboratory is doing harm; entirely too much stress is being laid upon it; it is clinical observation that is going to be the salvation of these cases. They will never reach the laboratory if the clinician does not first recognize them. The laboratory is only corroborative. It is not true that there are no symptoms early, as is stated by a recent work on cancer and which is becoming a common teaching. It is due to the ignorance of the practitioner that these symptoms are not recognized. The microscope and laboratory are entirely secondary in consideration to the training of clinical observation. We have a few symptoms which are invaluable in early cancer, and we cannot impress too firmly this fact upon the

minds of practitioners that these symptoms can be recognized in a very large per cent of cases, even in the very early stages of the disease, and, what is more, without the aid of the microscope and the laboratory. The present tendency to laboratory teaching is pushing clinical teaching into the background, and I can conceive of nothing more disastrous to the future of cancer of the uterus. Far be it from me to decry laboratory investigation and the microscope—they have their proper place in the teaching centres and in the hands of men equipped for the work—but not one physician in a thousand in the country can do this work, or has time or facilities to do it. Cancer is seen by these men first. Then teach them to be acute in observation and alert in symptomatology and the deductions to be made from the clinical aspect. The microscope is of necessity secondary, and it should remain so.

TRANSACTIONS OF THE WOMAN'S HOSPITAL SOCIETY.

Stated Meeting, February 26, 1901.

The President, JOHN ASPELL, M.D., in the Chair.

DR. GEORGE HOOPER MALLETT reported

**A CASE OF ABDOMINAL TUMOR RESEMBLING PREGNANCY;
AN EXPLORATORY INCISION FOLLOWED BY
SUDDEN DEATH.**

Every medical man will admit that there is sometimes difficulty in diagnosing pregnancy during the first few months of gestation, but after that time any error in diagnosis is related with great *éclat* as a joke upon the attendant or consultant. To show the opinion that some obstetricians hold as to the ease with which abdominal tumor may be differentiated from pregnancy, I quote the following from a popular text book on obstetrics: "Ovarian and fibroid tumors, if large, may cause distension of the abdomen; but in these cases the absence of all signs of a fetus will suffice to distinguish the conditions from pregnancy."

This seems easy, and yet I can recall several cases where surgeons of recognized diagnostic skill have made errors even when the abdomen was opened. The errors of diagnosis of abdominal tumors without exploratory incision are too frequent to elicit much comment. One of the leading gynecologists of this city and country told me of a note that he had received from a patient. It was as follows: "DEAR DOCTOR—The ovarian cyst that you said I had was born last month; it is a fine girl. Please return the fifteen dollars that I paid you for examination, or, if you choose, you may put it into a piece of silver for the baby."

The patient whose history I present to you was 32 years of age, a native of New York, twice married, no children. Had one miscarriage twelve years ago, induced, at three months. Occupation had been that of a trained nurse. Says that her mother had died from effects of syphilis contracted from her father. She herself had passed through the acute stages of syphilis some years ago, and some of the male members of her family had had similar experiences. Menstruation began when she was 14 years of age, and lasted from two to four days, with regularity and freedom from pain.

During the last ten months her flow has been very scanty, but has lasted about ten days—last few months more pain on first day than usual. During the month of July she noticed that her abdomen was enlarged, especially upon the right side. During the summer she had a great deal of gastric disturbance, eructation of gas, and some vomiting and irritability of bladder. She consulted her physician, who told her that she was three or four months pregnant. In October she felt something moving, but was uncertain as to fetal movements. She consulted another physician, who pronounced her pregnant, but referred her to still another practitioner, who made the same diagnosis. She came to me in January. I found the abdomen distended with what seemed to be a soft, fluctuating tumor, extending to the umbilicus and lying more to the right side. No fetal heart could be heard, no uterine movements felt. The abdomen presented a pigment line extending from the umbilicus to the pubes.

The breasts were distinctly enlarged, plainly pigmented, and contained an abundance of colostrum. The vagina presented no discolorations, and the cervix was slender and hard as compared with that of pregnancy. Ballotement was not obtained. A round mass, about the size of a fundus uteri, was felt in the cul-de-sac.

I made a diagnosis of ovarian cyst. A prominent gynecologist saw the patient in consultation and pronounced it a multiple ovarian cyst.

The patient seemed in excellent general health. Heart was normal. Urine presented a trace of albumin and a few hyaline casts, otherwise normal. Had had cough and pain at a point on posterior border of scapula, which had been pronounced a tubercular deposit, but at time of examination respiration seemed normal. Temperature 98.4°, respiration 20, pulse 80.

January 31, ether was administered, and I made an abdominal incision—small at first, and then enlarged to the umbilicus. There was revealed an apparently pregnant uterus, perfectly symmetrical and elastic; no small parts, but irregular soft masses could be felt in the uterus; veins were dilated enormously. Upon grasping the tumor what appeared to be contractions were felt. Behind the uterus in the cul-de-sac a large cystic ovary was discovered. The uterus was not lifted up and received very little handling.

Of the two distinguished gentlemen present, one pronounced the case pregnancy in utero, and the other declined to express an opinion. I agreed with the latter and closed up the abdomen, determining that, if a reasonable amount of time did not elucidate the problem, I would explore the contents of the uterus and, if necessary, remove that organ at a later date. Patient was put to bed in good condition, with a pulse of 96. During the night patient complained of considerable pain in her abdomen, and suppository of codeine, two grains, was given. Temperature reached 100.4°; pulse 96, which was its highest point. Morning after the operation, 10 A.M., temperature 98.4°, respiration 20, and pulse 82. Seemed cheerful and altogether in good condition. Complained of intermittent pains, which seemed to be uterine contractions. Morphine, one-quarter grain, was injected. Two P.M. of day following operation temperature rose to 99°, respiration 26, and pulse 110; 2:35, patient suddenly complained of choking sensation, shortness of breath, then of faintness; pulse became very rapid; vomited; lips became blue, the cyanosis quickly spreading over the whole face; respirations almost ceased; she became totally unconscious, pupils dilated; pulse could not be felt, and, in spite of restorative measures, she expired in less than fifteen minutes after the first symptom appeared. An autopsy was refused, but I obtained permission to examine the abdominal cavity.

Ten hours later the abdomen was opened. No signs of inflammation were present. The uterus was raised up and divided after the manner of a Cesarean section. The wall of the uterus was thin, and seemed stretched over a semi-solid mass of jelly-like consistence, with masses of great density. This, the pathologists stated, was a soft fibromyoma. I ascribed the sudden death to embolism of the pulmonary arteries.

What literature I have had time to look up has proved very interesting. Mahler, in Leopold's clinic, has described the clinical signs and the underlying pathological conditions, and numerous cases have been reported by German authors. Howard Kelly has reported a case of sudden death following an operation with almost the same clinical picture that I have endeavored to draw. A thrombus is formed in one of the pelvic or femoral veins, is dislodged and swept with the circulation into the pulmonary artery. If the thrombus is small the attack is characterized by precordial distress, pain, dyspnea, with rapid pulse. After one or more of these attacks the patient may recover completely. With the lodgment of a larger embolus the patient complains of pain in side or under shoulder blades; of suffocation, extreme precordial distress; sits up gasping for breath; cold, clammy sweat bedews the face; she becomes cyanosed, the mind becomes cloudy; death may occur in a few minutes or seconds.

Dr. Kelly's case was the fourteenth day after removal of a papillomatous ovarian cyst. Her recovery had been perfectly sat-

isfactory. That day she had been propped up in bed. During the night she complained of a numb sensation in the left leg. The nurse, supposing that she was suffering from the cramped position, turned her over and rubbed the leg vigorously. Suddenly she gave a sharp cry; the symptoms that I have described followed, and she died in a few minutes.

Thrombi are due to prolonged pressure of pelvic tumors upon pelvic veins, to anemia, marasmus—notably that associated with carcinoma—heart disease that diminishes the force of circulation, and to local infection spreading through walls of veins. The immediate cause of dislodgment of the clot may be found in coughing or sudden change of posture. These latter remarks are taken from Dr. Kelly's excellent paper on "Sudden Death Following Operations."

It is interesting to note that of 43 cases of embolism recorded by Gessner 18 occurred after myoma operations.

From the difficulty experienced in diagnosing the case, one is forced to the conclusion that only the fetal signs, ballottement, fetal heart, etc., are positive proofs of pregnancy.

I should like to ask the gentlemen who discuss this case: In what proportion or how many women they have confined who have menstruated through pregnancy? and, What conditions other than pregnancy give mammary changes simulating that condition?

DR. W. GILL WYLIE.—Menstruation during pregnancy was rather rare. He remembered one case that menstruated up to the sixth or seventh month, and cases had gone up to the eighth month. He had not had more than three or four cases in thirty years.

AMPUTATION OF THE CLITORIS.

DR. W. GILL WYLIE had not removed a clitoris for many years. He did not see many cases in private practice where he felt justified in performing this operation.

The first case he reported occurred in a nurse who became very nervous. Before I saw her she had been treated at the Post-Graduate Hospital, where it was noted that the vulva and clitoris were persistently irritated. There was apparently a severe eczema. She was treated for pruritus vulvæ, but the trouble persisted. She was treated at three other hospitals later. The lady in whose house she had been employed offered to pay for her care, so Dr. Wylie took charge of the case. She evidently had the habit of masturbation. She was kept in the hospital, her bowels were regulated, and the condition was treated as one of chronic eczema. Nitrate of silver injections were employed. She seemed to quiet down and to improve very much, gaining in weight and flesh, and became less nervous. She later suffered a relapse and was sent to Bellevue Hospital, where her clitoris was amputated. The woman was nearly 40 years old, so Dr. Wylie felt no complications in regard to this measure and took off the labia

freely. He said he did a very good operation, leaving no deformity or scars. The patient recovered completely.

A year ago Dr. Wylie saw a young Jewess. She had a history of painful menstruation and other symptoms of some local trouble. She had grown very nervous, became very much deranged, and had not spoken a word for two years. Everything about her indicated that she was insane. She apparently understood conversation, although she would not speak. Examination revealed positive evidences of masturbation, the clitoris being enlarged. The uterus was dilated and curetted, a drainage tube introduced, and later the clitoris was amputated. She gradually improved in health and was not caught masturbating, for a time at any rate, and she began to walk about, but she would not speak. She was sent to the country with an ordinary nurse. She played on the piano and gained in physical health, and returned in four months in a most perfect physical condition. An acne which she had had subsided. She talked perfectly, three or four words being used intelligently. After being watched closely, with no signs of again attempting to masturbate, and not showing any positive amorous signs, she was considered about cured. The alienist gave her small doses of opium in some form, thinking it might change her condition, and at once there occurred signs of marked nymphomania. She followed men about, slipped out of her room and got into bed with men, etc. When the opium was stopped the nymphomania ceased. This case showed that the clitoris has something to do with the sensations, but not all.

Last year a young Jewess was brought to Dr. Wylie by Dr. Spitzka, who said the patient had some local trouble. She had marked endometritis, which was relieved by dilatation and curettage. The clitoris seemed to be adherent. It was not a marked case of hardening of the tissues from masturbation; there were little granular red spots about the urethra, and the hymen was especially reddened. This condition lasted only a few months. She had peculiar sensations in those parts. She became possessed of the idea that there was something wrong with her and that people knew it, and she made peculiar statements in the presence of strangers. The hood of the clitoris was slit back to the top of the corona and the edges stitched with catgut; the hood was thrown to the sides, so that the head of the clitoris was always exposed—an excellent thing, especially in chorea. The girl improved, but still had some symptoms which brought her back to the hospital. She was placed in the hands of an experienced nurse, who found the patient to be a masturbator. Last spring the clitoris was removed. In a short time she regained her equilibrium and had been perfectly well since, with no tendency toward any return of the habit of masturbating.

Recently he had seen a young girl from a refined family who developed unusual symptoms after being in a New York boarding school, before which time she had been all right.

Her mother was a nervous individual. The patient, besides being nervous, wished to be alone and talked of dying, etc. She sent for a woman doctor, who undertook to treat her locally for displacement for several months. Dr. Wylie was first impressed by her as not being one who had become degraded through masturbating. Her hands were clammy and cold, she was nervous, and she apparently at times feared she would lose control over herself. She said that when she came in contact with young men she had peculiar sensations which she did not understand, and she did not know how to act toward them. She wanted to avoid all society. The head nurse found that she had emissions in the presence of men. Examination showed no sign of thickening or hardening of the parts. The clitoris was small and covered up. The hymen was exceedingly friable and sensitive, and the tissues were almost like granulation tissue. Around the urethra and extending laterally were peculiar little enlargements in the mucous membrane, like vegetations, such as any irritation might produce. The secretions were very active, almost like emissions. An alienist pronounced this a case of paranoia and made a serious prediction. He thought that she should be carefully watched and in a short time placed in a retreat. He suggested bromides. Dr. Wylie removed the hymen and the little lateral protuberance about the vulva. The uterus showed only a little granular erosion. She quieted down nicely. Before being sent away she was seen by another alienist, who talked to her sister with great interest, and he came to the conclusion that there was no disease of the brain and nervous system. It was decided that her trouble was connected with the generative organs. She would be kept under observation, and, if necessary, her clitoris would be removed. She was not a confirmed masturbator. Development had a great deal to do with these cases. In general, active exercise should be allowed to keep up the strength and to keep down the passions, giving substantial food, keeping the mind busy, and avoiding emotional excitement. It was amazing what two or three years would do to develop and bring about a normal repose of the nervous system. A large number of young women were going wrong because it has been taken for granted that there was some disease or abnormal condition of the brain or nervous system causing trouble, instead of there being an imperfect development of the generative organs resulting in reflex nervous disturbances, which could be cured by simple local treatment and improving the general health and surrounding the girl with a quiet environment without emotional excitement or excessive mental work, thus allowing complete and harmonious development of all her organs.

DR. CLEMENT CLEVELAND referred to a case occurring in his practice fifteen or more years ago. A woman, age 18, married to a man of 28, was a confessed masturbator. Examination disclosed a large clitoris. Her marital relations were not pleasant. She was excessively nervous and excitable.

Her mind appeared to be more or less affected, but this could not be positively determined by consultation with several nerve specialists. She was also seen in consultation by Drs. T. G. Thomas, Lewis A. Sayre, and Fordyce Barker. She was greatly improved by clitoridectomy and went abroad for the summer. On her return her relations with her husband were vastly improved, though she still appeared to be queer and flighty. While abroad she formed the wish to become an actress. Her husband had entered the Episcopal Divinity School in this city and naturally did not relish this idea. They had frequent quarrels and misunderstandings. One night she attempted to shoot him, as she said she had grown tired of him and thought that was the quickest way of getting rid of him. She died the following year in China of pneumonia.

DR. LE ROY BROWN asked whether in this case there was any irritation from the nerve endings being caught in the lining membrane. The experience of Sims and Thomas had showed that there was considerable irritation following the removal of the clitoris.

DR. W. GILL WYLIE had had no such trouble with his cases. He did not think so many of these cases should be called paranoia, for many of them would improve when any imperfect development was corrected. He believed that frequently in children who are mentally badly developed the generative organs were out of equilibrium, and he could not always agree with the alienist that the mental state induces abnormal conditions of the generative organs. These local conditions, producing reflex disturbances, tend to prevent the nervous system from developing. He had not seen any good resulting from the use of bromides and opium in these cases.

DR. BACHE MCEVERS EMMET read a paper on

PROCIDENTIA UTERI.

DR. W. GILL WYLIE thought that in cases where the displacement was more or less congenital from imperfect development, and where the uterus had been down all the time, some operation might be justified which otherwise would not be. All operations attached the uterus in an abnormal position, which was bad. Hysterectomy should be done only in very rare cases. A great many times operation was attempted before involution was reduced. Hundreds and thousands of these operations were done which could be avoided; they were operated upon too soon. He did not approve of operations where the inguinal canal was opened, and did not do the operation called by his name, because the distal ends of the round ligament were friable and too weak to hold the organ in place. The last two or three inches of the cord were strong enough to hold up a large organ; so if that portion of the cord could be secured it could be firmly attached to the columns and very beautiful results obtained. Alexander's operation should be avoided in those cases where peritoneal adhesions hold the

organ back. If Alexander's operation could be done properly, and a pessary kept in two or three months after the operation, no procedure would produce such good results. When this operation was well done it was best for the patient, for the organs were left in a normal condition and without abnormal attachments. If operation were done on the anterior surface of the uterus it invariably made a too high attachment, and if the attachment were strong enough it would cause an elongation of the uterus, so that some women could hardly walk.

Procidentia was not as common as was supposed, and constipation had a great deal to do with its production, especially in young women who were not well developed. Dr. Wylie had done the Alexander operation with success where the uterus was small, but where the uterus was large he did not do it, unless he was able to reduce it nearly to a normal size; in such cases there was no operation that could compare with that of Alexander.

DR. CLEMENT CLEVELAND said that most of the cases of procidentia that came under his care were in elderly women. In these cases the Alexander operation was out of the question, for the round ligaments would have almost disappeared by atrophy. In any case of procidentia very little could be accomplished by shortening the round ligaments. He believed that the Le Fort operation gave the best promise of stable results.

DR. E. L. H. MCGINNIS stated that if the uterus had not involuted it can certainly and easily be done by electricity. Some had said that the same agent could be made to shorten the over-stretched ligaments, but he did not think it would. His opinion was that, if some procedure was necessary after reduction of size and weight of the uterus, Le Fort's operation or some modification of it should be done.

DR. LE ROY BROWN could not conceive why in any conditions, in any women of any age, we should expect the ligaments in Alexander's operation to be sufficiently strong to hold such a weight as the uterus and portions of the vaginal walls. In Dr. Cleveland's service the operation that had given most excellent results was Le Fort's, especially in widows and in those past the menopause. This operation gave immediate relief, was followed by a good perineum, yielded the most satisfactory results. In reference to this operation, which consisted in the formation of a narrow band which really makes two vaginas, it had been done in Dr. Cleveland's service up to five years ago. Three years after such an operation the woman became pregnant. The presenting head would not descend, but rested upon a band in the vagina which would not give nor would it stretch. When this band was divided with a pair of scissors everything was all right. The operation that he had been doing of late in Dr. Cleveland's service in women who were married or in the childbearing period was to narrow the vagina laterally upon both sides, especially toward the perineum. The results at the time these patients

left the hospital had been excellent, the uterus being in good position, being well up in the pelvis without any relaxation, or falling down, or sagging to any extent. The method employed was to make an incision on both sides of the vagina extending down to the perineum, stripping the surface and sewing meanwhile. With the hope of narrowing the vagina, the uterus was pushed up. The vagina was left with a width of about three fingers. The perineum should be narrowed still more, so as to make an entrance nearly the size of a nulliparous woman. The first operation he did last spring, and the uterus was now in an excellent position. One case, now in the hospital, had resulted well, the uterus being in good position.

DR. J. N. WEST said that Dr. Bache Emmet, in his paper, had suggested the possibility of shortening the utero-sacral ligaments as one of the means of anteverting the uterus, and aiding in that way the other measures used to restore and keep the uterus in place. In watching the work of Dr. T. A. Emmet, whom he had assisted, he was always mystified to see the effect of his sling operation for procidentia in anteverting the uterus. Dr. Bache Emmet's suggestion of shortening the utero-sacral ligaments seemed to offer a rational explanation of the way in which Dr. T. A. Emmet's operation holds the uterus up and forward. He had seen how good the results were in a patient upon whom he had just performed the operation and whose abdomen he had opened for a further procedure. Dr. T. A. Emmet, in performing his operation, denudes a surface of the vagina anterior to and to each side of the cervix, and, pushing the cervix back toward the hollow of the sacrum, fastens his two denuded surfaces to one in front of the cervix. Dr. West thought this took up the slack in the utero-sacral ligaments, thereby anteverting and lifting up the uterus. Of course this does not complete the operation, but, as you all know, it is followed by an operation upon the anterior wall, taking up evenly all the slack tissue contained in it.

Remarkable involution takes place in a case of procidentia from having the organ kept in place and the pelvis emptied of blood by elevation of the foot of the bed. The above-mentioned method was by far the best ever devised for the great majority of such cases. He had seen a number of women who left the Woman's Hospital some months after the last operation and were then in good condition. Each case of procidentia should be a study in itself, and its causes taken into consideration before settling upon a way to treat it, as whether it be due to injuries to the cervix, tumors, laceration of the perineum and rectocele, retroversion, general relaxation of the normal pelvic supports, or anything which drags or pushes the uterus down. The best method was to correct whatever might stand in the way of reposition, perform the sling operation and repair all old injuries. The reason this operation of Dr. Emmet's was not generally employed was that it was exceedingly difficult. Ordinary sutures would not answer the pur-

pose in it; silkworm gut was too irritating and would cut out; catgut sutures might carry infection. Dr. Emmet used silver wire sutures, and a double one where much tension fell.

DR. BACHE EMMET said that a sling could be made by catching a portion of the vagina on either side of the uterus and making it fast in front of the cervix. Possibly the importance of thus securing the aid of the utero-sacral ligaments should have been more strongly insisted upon. He had seen many cases in which return of the displacement had occurred, so he realized that taking up the muscular structure of the vagina could act but imperfectly upon those ligaments. After the uterus had been reduced in volume, the plastic methods, taken up *seriatim*, were productive of great benefit. More time should be taken with these patients for preparation. In hospitals they were usually disposed of as soon as possible.

Dr. Emmet could conceive that Dr. Broun was doing much toward limiting the capacity of the vagina, but, if it was a case of genuine procidentia, he thought that the uterus would come down again. One of the troublesome things was to make the fundus lie forward. He had seen it low down even in Le Fort's operation, and it might become even more so, the uterus acting like a wedge, if the channel was in the centre of the vagina.

Official Transactions.

H. GRAD, *Editor*.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Stated Meeting, June 15, 1900.

The President, S. S. ADAMS, M.D., in the Chair.

DR. G. N. ACKER read the paper, entitled

CYCLIC VOMITING.¹

DR. W. S. BOWEN said there might be a chance of mistake in the diagnosis at first, but not for long, for the symptoms were unmistakable. He had seen a case in October, 1899. The child had been languid for two or three days and had had one whitish stool a day for three or four. The next day the attack followed a slight punishment. When vomiting began the temperature was subnormal, pulse weak, skin cold, great restlessness, rapidly increasing weakness. Dr. W. M. Johnston was called in consultation and pronounced it cyclic

¹ See original article, p. 657.

vomiting. The child seemed so ill that the speaker remained all night, using strychnia hypodermatically and salt solution. He gave nourishment by bowel. A teaspoonful of whey every half-hour was all that was taken for ten days. The urine, examined after the attack, was normal. In January there was a similar attack, but the child became more rapidly worse and went into coma. Dr. Bowen gave, by transfusion, two-thirds of a pint of salt solution, and, after not having slept for twenty-four hours and crying for water, the child slept three-fourths of an hour and awoke very much refreshed. He lapsed into the same condition after two hours. Transfusion was again used. The child again revived and had been well ever since. Both attacks followed excitement and could not be attributed to food. The abdomen was not distended. Treatment seemed to have no effect.

DR. H. L. E. JOHNSON said he had seen three cases, one of which he had treated for three years. The first had been cured after forty-eight months by tincture of iodine. The second suffered for five years and died of some other affection. The third was once relieved by the use of hydrogen dioxide. He had suffered for three years. The attacks began with diaphragmatic pain and excessive secretion of saliva occurring every three or four months. It now lasted a month at a time. Dr. Jung washed out his stomach, with no result. A stricture and an elongated uvula were treated. He had no eye strain. Temperature was subnormal. The vomitus contained a germ resembling the gonococcus, but not identical; there was a deficiency of HCl. He belched a large amount of gas. No trouble was found with his urine or feces. Food had no influence on the attack. He went South and gained flesh, but vomited again on his return. Formalin once relieved him.

DR. DEALE had seen a case ten years ago who still vomited, though everything had been done for his relief. He had vomited two or three ounces of blood at a time.

DR. T. C. SMITH said vomiting was frequently due to cerebral anemia, and might be relieved by rest, lowering the patient's head, and giving bicarbonate of soda in cold water, not iced, and opium hypodermatically or by rectum.

DR. J. W. BOVÉE never used ice for vomiting after anesthesia. It would not stop the vomiting, and the cold was harmful after the shock of operation.

DR. S. S. ADAMS had observed two cases. In one the patient had no pain, but a peculiar feeling in the epigastrium. The other vomited several times a year. In both adenoids were discovered, and recovery followed their removal.

DR. G. N. ACKER cited the case of a lady who developed vomiting, with syphilis as a cause. Nearly every case has a different cause—adenoids, diet, fright, nervousness, etc. In nearly all HCl was increased. Light gray stools had not been constant. He gave ice when it did no harm. Cocaine relieved vomiting in some cases. His cases did not have a cough, and anemia had not been a prominent symptom.

There was an excessive amount of mucus in the lungs, with no apparent cause.

Stated Meeting, October 5, 1900.

The President, S. S. ADAMS, M.D., in the Chair.

The President, DR. S. S. ADAMS, read the annual address, entitled

POINTS OF SIMILARITY AND DISSIMILARITY OF CROUPOUS PNEUMONIA AND PULMONARY TUBERCULOSIS IN YOUNG CHILDREN.¹

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

Meeting of January 2, 1901.

The President, MR. ALBAN DORAN, in the Chair.

DR. G. P. ANNING and MR. HARRY LITTLEWOOD read a paper on a case of

PRIMARY OVARIAN PREGNANCY WITH RUPTURE FOURTEEN DAYS AFTER LAST MENSTRUATION.

The patient was aged 28 years, married five months, with no previous pregnancy. Menstruation was usually normal.

She was operated upon on August 27, 1900, for a ruptured ectopic gestation, about thirty-six hours after the rupture. About two pints of blood and clots were removed, and a small ovum about the size of a Barcelona nut was found. This fitted into a firm envelope composed of laminated clot. There was a rent in the right ovary leading to a cavity which contained some blood; into this the ovum and its sac exactly fitted, clearly indicating the primary ovarian origin of the pregnancy. The right tube was removed and showed no evidence of rupture. The left tube was examined and found normal. The cystic portion of the left ovary was removed.

The patient made a good recovery.

The specimens were shown with microscopical sections of the ovum, the sac, and a portion of the ovarian wall.

MR. BLAND-SUTTON remarked that belief in ovarian pregnancy could be traced back more than two centuries, but a critical examination of recorded cases showed that in some instances the supposed ovarian fetus was in reality a dermoid, and in others a sequestered fetus (lithopedion) in the broad ligament. In a few instances the account of the dissection is

¹ See original article, p. 638.

so careful and circumstantial as to leave the impression that the formation of the embryo in the ovary could not be denied. It must also be borne in mind that the modern cases prior to 1899 rest upon no safer evidence than the non-detection of the ovary during an operation or upon the postmortem examination of a person with an advanced extrauterine gestation. Even such a careful and judicious writer as Dr. Farre did not deny the possibility of a spermatozoon entering an ovarian follicle, but he denied that any case of ovarian gestation had been satisfactorily proved. Mr. Bland-Sutton came to the same conclusion after a study of a much larger number of specimens than was available to Dr. Farre, and with the advantage of modern methods of histological research. His (Bland-Sutton's) investigations have been particularly directed to the very early stages; for he urged, as a postulate, that if the ovum is really capable of being fertilized in its follicle, "an early embryo in its membranes contained in a sac in the ovary" should be forthcoming. He was convinced that the specimen now before the Society was an example of early ovarian pregnancy; the only possible objection that could be raised to this view of its nature depended on the fact that the authors of the paper had not taken any steps to prove that the "mole" had not been ejected through the celomic ostium of the tube (tubal abortion). Bland-Sutton would not press this objection, because he had sections of a more complete specimen which quite satisfied him that an ovum could be fertilized whilst in its follicle. Dr. Anning and Mr. Littlewood were entitled to and would receive the best thanks of the Obstetrical Society for their kindness and energy in coming from Leeds and recording a case that would become historic. Since the last meeting of the Society Mr. Bland-Sutton had visited Amsterdam and, through the courtesy of Dr. Catherine van Tussenbroek, had been able to see the early example of ovarian pregnancy described by her, and had brought back sections which would be available for inspection by any Fellow of the Society. There are a few features particularly worth mention in connection with this important case. The condition of the parts is exactly analogous to that of a tubal mole, so that for convenience of reference we shall have to speak of it as an "ovarian mole"; the blood corpuscles in the vessels of the villi are nucleated; there is no trace of a decidua in the ovarian follicle; and it is an interesting fact that in the clinical report of the case it is stated that a decidua had formed in the uterus, and, a few days after the operation, was discharged with the "douleurs d'accouchement."

Mr. Bland-Sutton further stated that he had always been candid in his expressions of doubt regarding the older cases of alleged ovarian pregnancy, inasmuch as they could not be again brought under observation and re-examination in the light of new knowledge, hence his persistent request that the postulate in regard to the presence of *an early embryo in a sac inside the ovary* should be satisfied.

Another matter profoundly interesting to him is the fact that the "mole" with its chorionic villi, which had become the criterion for many cases of early tubal pregnancy, seemed likely, from this specimen, to become the criterion of early ovarian pregnancy also, and a large field of inquiry had thus been opened, for the condition known as blood cysts of the ovary will now require very careful investigation in the new light afforded by this remarkable and epoch-making specimen.

DR. GALABIN thought that the Society might be congratulated that this much-controverted question might now be considered finally settled, since Mr. Bland-Sutton was converted. He had always believed in the possibility of both ovarian and primary abdominal pregnancy, and thought that those who denied it had gone upon an *a priori* assumption that the tube was the only structure besides the uterus which could give primary attachment to the ovum.

He had not himself met with a case of ovarian pregnancy, but believed that he had met with one of primary abdominal pregnancy, which was presented to this Society and reported on by a committee as being probably of that nature.

MR. LITTLEWOOD said he thought the case clearly proved the possibility of a primary ovarian pregnancy, and was glad to have had the opportunity of bringing the specimens to the first meeting of the Obstetrical Society in the new century. He thought the Society was greatly indebted to Mr. Bland-Sutton for having gone to Amsterdam and bringing the specimens he had shown.

THE PRESIDENT referred to his own analysis of cases of alleged primary ovarian pregnancy, published in the thirty-fifth volume of the Society's Transactions. In Snger's and Leopold's specimens there was a lithopedion, and, as might be expected, the relation of the sac to the Fallopian tube could no longer be accurately determined. In Herzfeld's and many other cases the fact of the tube being intact was erroneously taken for proof that the pregnancy could not have begun in its canal. But Patenko's case seemed more probably genuine. In Dr. Croft's case the evidence was strong, but the pregnancy was somewhat advanced. Mr. Bland-Sutton deserved credit for the trouble he had taken to make sure about Van Tussenbroek's case, which seemed to offer almost conclusive evidence of primary ovarian pregnancy. The same might be said of Dr. Anning's and Mr. Littlewood's case. The President suspected that these primary ovarian pregnancies aborted and broke down early, as seen in Patenko's specimen. Late ectopic gestations could generally be explained as developments, more or less evident, from a tubal sac.

Meeting of February 6, 1901.

The President, MR. ALBAN DORAN, in the Chair.

The following vote of condolence to the royal family was passed by the Fellows:

"That the President and Fellows of the Obstetrical Society of London humbly beg to express their sincere sorrow at the death of their beloved Queen, and they further beg to tender to the royal family their deepest sympathy, and to His Majesty the King the assurance of their loyalty and devotion to the throne."

MR. HASTINGS GILFORD showed a specimen of

RUPTURE OF THE SAC OF AN EARLY PRIMARY OVARIAN
GESTATION IN A WOMAN AGED THIRTY-EIGHT.

Rupture with severe internal hemorrhage occurred fourteen days after the previous menstrual period. At the operation the Fallopian tubes were found to be intact, and there was a rent in the left ovary, with thin irregular edges, with firm clot attached. About two pints of blood had escaped from the rent. The firm clot attached to the rent was believed to be a "blood mole." The author argued against the hemorrhage having come from either a tubal abortion or a ruptured matured Graafian follicle.

DR. T. W. EDEN said that, speaking from a casual examination of the specimen, he doubted if it were really an example of ovarian pregnancy. On naked-eye examination the so-called mole did not show much evidence of being a product of gestation at all, but perhaps the presence of chorionic villi had been demonstrated by the microscope. The specimen differed greatly from the examples of ovarian gestation recently shown to the Society by Dr. Croft, and from the classical case of Van Tussenbroek, in the circumstance that the ovary was little altered in its outline and shape, the cavity in which "the mole" was contained being quite superficial. One of the essential points in the diagnosis of ovarian pregnancy was the demonstration of ovarian tissue in the wall of the gestation sac, and this did not seem to be practicable in the case now before the Society, for the wall of the sac appeared to be an adventitious product.

DR. C. J. CULLINGWORTH, speaking in reference to the condition of the Fallopian tube, said too much importance should not be attached to this. It had been shown that the tube might very quickly resume its normal size and appearance after tubal rupture, and it was obvious that it would even more readily do so after tubal abortion. He referred to cases reported by himself, the President, and Mr. Bland-Sutton to prove that the empty condition and innocent appearance of the tube were not incompatible with the gestation having been primarily tubal.

DR. HEYWOOD SMITH asked if ovarian pregnancy had been observed in the lower animals.

MR. GILFORD replied, and consented to his specimen being referred to a sub-committee for report.

A report of the sub-committee on DR. CROFT's specimen of primary ovarian pregnancy was read, agreeing with his view of the case.

DR. W. H. TATE showed a

FIBROID TUMOR

with marked cystic degeneration, removed from a patient aged 63, from whom both ovaries had been removed eleven years previously. The woman suffered from severe menorrhagia, due to a fibroid reaching the umbilicus. After the operation in 1889, when a tubo-ovarian cyst on the right side and the appendages on the left were removed by Dr. Cullingworth, she remained well till 1896, when hypogastric pain recurred and the fibroid was found to be increasing in size. Last month the fibroid reached $11\frac{1}{2}$ inches from the pubes and was evidently cystic. Dr. Tate removed the fibroid by abdominal hysterectomy, and the patient recovered. The tumor was found to be a fibroid converted into a loculated cavity containing 42 ounces of coagulated straw-colored fluid.

The case proved that degenerative changes in uterine fibroids may occur after complete removal of the appendages as well as after a natural menopause.

DR. CULLINGWORTH urged the importance of recording all cases bearing on the liability of fibroids to increase in size and to undergo serious degenerative changes after the menopause.

DR. C. HUBERT ROBERTS asked if the spaces in the specimen had an endothelial lining. He had not found such a lining in any cystic fibroids of the uterine body, but the spaces contained an easily coagulable serous fluid. He thought such spaces were due to retrograde degeneration and were not of lymphatic origin. The spaces found in cystic fibroids of the cervix were not uncommonly lined by epithelium.

The report of the Hon. Treasurer, DR. J. WATT BLACK, was then adopted, upon the motion of Dr. C. H. F. Routh, seconded by Dr. Peter Horrocks.

The report of the Hon. Librarian, DR. M. HANDFIELD-JONES, was adopted, upon the motion of Dr. A. H. N. Lewers, seconded by Dr. Drummond Robinson.

The report of the Chairman of the Board of Midwives, DR. PERCY BOULTON, was adopted, on the motion of Dr. G. E. Herman and Dr. C. J. Cullingworth.

The following list of officers and Council for the ensuing session was then announced, Dr. Edward Malins proposing, and Dr. W. G. Gow seconding, a vote of thanks to the retiring Vice-President and members of Council:

President—Peter Horrocks, M.D.

Vice-Presidents—John W. Byers, M.A., M.D., Belfast; William Radford Dakin, M.D.; John Phillips, M.A., M.D.; Edward Malins, M.D., Birmingham.

Treasurer—James Watt Black, M.D.

Chairman of the Board for the Examination of Midwives—W. R. Dakin, M.D.

Honorary Secretaries—Herbert R. Spencer, M.D.; Amand Routh, M.D.

Honorary Librarian—Montagu Handfield-Jones, M.D.

Other Members of Council—Charles Edmund Adams; A. H. Freeland Barbour, M.D., Edinburgh; George Francis Blacker, M.D.; Robert Boxall, M.D.; Henry Briggs, M.B., Liverpool; Francis Henry Champneys, M.A., M.D.; Thomas Vincent Dickinson, M.D.; Charles Owen Fowler, M.D.; William John Gow, M.D.; Walter Spencer Anderson Griffith, M.D.; George Ernest Herman, M.B.; Arthur H. N. Lewers, M.D.; Thomas Robert Lombe, M.D., Torquay; William Loudon Reid, M.D., Glasgow; William Japp Sinclair, M.D., Manchester; Arthur Francis Stabb, M.B., B.C.; John William Taylor, F.R.C.S., Birmingham; Charles Percival White, M.B.

ANNUAL ADDRESS.

The President, MR. ALBAN DORAN, delivered this address. He remarked that the Society, founded in 1859, was within eight years of its jubilee, and never stood higher than it did at present for the high quality of the contributions read at its meetings and for the interest taken in its discussions. After reviewing the work of the past year, the President announced that the Council had appointed a sub-committee to draw up an Index founded upon the various systems of teratological nomenclature at present in use and upon the specimens in the London museums; for it was felt that an index of this kind would be of great value to Fellows showing specimens before the Society and might well become a standard system of nomenclature, at least for English writers. The President read obituary notices of the five Fellows of the Society who have died in 1900—namely, one Honorary (and Original) Fellow, Sir W. O. Priestley, and four Ordinary Fellows, Dr. W. Chapman Grigg, Mr. Claude Clarke Claremont, Dr. Horace Howell, and Dr. John Baptiste Potter. Finally the President, in resigning his office, thanked the Society for the friendly support which they had granted him and congratulated them on their choice of a successor.

A vote of thanks to the retiring President for his address and for his able chairmanship was moved by Dr. F. H. Champneys and seconded by Dr. J. Watt Black, and was carried by acclamation.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Rupture of the Uterus.—Iwanow¹ reports a case of rupture of the uterus during labor in which he extirpated the organ per vaginam. A woman 26 years old came under observation in a state of extreme collapse. According to her statement she had been in labor about twenty-four hours, with the child in transverse presentation and one arm prolapsed. Internal examination demonstrated rupture of the uterus; child in abdo-

men, placenta in vagina; uterus well contracted, bleeding slight. Extraction of child per vaginam, removal of uterus after usual technique. Douglas' cul-de-sac contained masses of coagulated blood and meconium; these were removed and a tampon of sterilized gauze was inserted. The patient made an uneventful recovery and left the bed two weeks after operation.

T. Alexandroff¹² draws his conclusions from one case of rupture of the uterus occurring at night three weeks before, without known cause, in a IIIpara 25 years old, and from eighteen cases recorded by others. He believes that encroachment of the placental tissue upon the wall of the uterus has an important bearing upon the occurrence of this accident. He finds that the chorionic villi burrow deeply between the bundles of muscle fibres, and connective-tissue changes occur in the uterine wall. The decidual tissue is a protective covering whose injury forms a *locus minoris resistentiæ*. The importance of elastic tissue in relation to rupture of the uterus seems doubtful. Any known invasion of the uterus by the placenta in previous labors should lead to careful observation during pregnancy as well as at the beginning of labor. If rupture occurs, the tear should be tamponed to arrest hemorrhage and the fetus then removed by laparotomy. Microscopic examination of the site of rupture is necessary for a determination of its cause.

Face Presentation, Chin Posterior.—Papescul¹³ reports an example of this rare and difficult complication. [The case proves that rectification of presentation with the forceps is a dangerous, unscientific, and brutal manipulation. The indications in face presentation with chin posterior are clear: if seen early, perform podalic version; but when the head is already fixed in the pelvis and refuses to rotate, perforate. Perforation kills the usually moribund child; forceps rectification, if it does not kill the mother, must certainly cause serious injuries.] A woman, IIIpara, sent for Papescul because the attending midwife had diagnosed a breech presentation. Previous confinements rapid and uncomplicated. In labor about twenty-four hours, membranes ruptured. Pains had ceased. Os fully dilated. Face presents, chin posterior. Head firmly fixed in pelvic cavity, precluding the possibility of performing version. Forceps applied in second oblique diameter; the *concavity* is directed toward the *sacrum*. Simultaneous traction and rotation until the chin points toward the right side. Removal of forceps and renewed application in first oblique diameter. Further traction and rotation produced a typical face presentation, which was extracted without much difficulty. Immediately following delivery severe hemorrhage, which was checked with usual means. The next morning the woman was pulseless, and, in spite of all efforts to revive her, she died twenty-four hours post partum. No postmortem, but death was probably due to severe laceration of the uterus and other soft parts. Whether the child was delivered alive is not stated.

Porro Operation.—Abnormal development of the fetus at times causes insurmountable obstacles to delivery and necessitates Cesarean section, although the pelvic measurements are normal. A case to the point is reported by Riedinger,¹ in which the Porro operation became necessary to remove an excessively large and dead fetus. The woman came under observation after having carried beyond the probable terminus of pregnancy. About three weeks prior to admission she experienced slight pains, which continued with longer or shorter intervals, and, although almost entirely preventing rest and sleep, produced no apparent progress. At the time of admission the pains were stronger, the cervix had begun to dilate, but the head was high above the pelvic brim and could not be touched by the examining finger. Fetal heart sounds and movement had ceased. A dark-reddish discharge escaped from the vagina. Pelvic measurement was normal. Pulse 108, temperature normal. Within six hours after entering the clinic the patient experienced a chill, and both pulse and temperature indicated the absorption of putrid substances. There being no doubt about the child's death, it was decided to perforate. Dilatation of cervix with scissors and perforation; application of cranioclast, which, although its grip was perfect, did not advance the head, but removed the cranial vault in pieces. Seeing the uselessness of further traction, version was attempted, but also failed. There remained only laparotomy and Cesarean section, and, considering the decomposed contents of the uterus, the Porro operation was elected. This operation was performed without much difficulty. The fetus, minus brain and cranium, weighed 5,750 grammes (12 pounds) and was 64 centimetres in length. Patient recovered.

Cesarean Section.—Backhaus² performed Cesarean section in a case in which an embryoma of the left ovary occupied the whole pelvis, preventing descent of the head and delivery per vaginam. The tumor, about the size of a fetal head, showed fluctuation in parts, but, on account of the dubious contents the author decided against puncture. Opening of abdomen and uterus after usual technique; the uterus contains large quantities of liquor amnii having a most repulsive odor; in spite of this the child is living and well developed. The tumor was, as diagnosed, an embryoma of the left ovary, containing fat, hair, and rudimentary bones. Its pedicle was very thin, but there were numerous adhesions with the omentum. The patient made an uneventful recovery.

C. H. Hare³ performed Cesarean section upon a case of placenta previa. The patient was in a very low condition, having bled profusely, and Hare thought the chances of life were better if the child was delivered through the abdomen than if through the vagina. The mother died eleven hours after the operation; the child lived for thirteen days. Hare believes that, taking cases as they come, with the life of both mother and baby to be considered, Cesarean section will save more lives than vaginal delivery.

Niel Macleod^{*} performed Cesarean section upon a patient at full term on account of an impacted, retroverted, and retroflexed uterus. The child was delivered alive, but died a few hours later. At the time of operation an intramural fibroid was discovered upon the anterior wall, which was removed. The mother made an uninterrupted recovery.

Colin Campbell^{*} reports a successful Porro-Cesarean section. The operation was performed on a patient four feet high who had a pseudo-malacosteon rachitic pelvis.

H. Hübl¹² is strongly opposed to the transverse incision of the fundus in Cesarean section, chiefly because he holds that this is carried through a thinner portion of the uterine wall than a longitudinal incision and hence affords a poorer opportunity for suturing the wound.

Inversion of the Uterus.—Thomas Oliver^{*} discusses a case of inversion of the uterus of seven months' duration. He tried forcible taxis, but failed to reduce the uterus. An Aveling's repositor was applied, the vagina packed with gauze, and the suspenders of the instrument drawn tight. The repositor was left *in situ* for three days; the suspenders were tightened daily. At the end of the third day the repositor was removed and the inversion had entirely disappeared.

Abortion.—J. R. Hellier^{*} states that 18,000 women, who attended the out-patient department of the Hospital for Women and Children at Leeds, gave birth to 6,974 children, an average of 3.87 each. They had, according to their own statements, 1,288 abortions. This amounts to about one abortion to every five and a half children. The number of women in the 18,000 who had had abortions but no children was 58. Thus 96.5 per cent of those who became pregnant had children.

Oelschläger^{*} describes a new method of producing abortion. A curved silver catheter of about two millimetres lumen is introduced into the uterus and pushed up to the fundus, the latter being essential to success. A syringe with a capacity of four grammes is attached to the catheter, and three to four grammes of tincture of iodine are injected into the uterine cavity. Removal of the catheter, and a vaginal tampon placed against the cervix to prevent any iodine from coming in contact with the vagina, complete the manipulation. If performed in the early weeks of pregnancy, no symptoms will occur, but within two or three days the woman will have a normal menstrual epoch. Should this menstruation not take place, the failure is probably caused by the catheter not being pushed up far enough. Oelschläger states that this method is uniformly successful and absolutely free from danger. The iodine easily penetrates the embryonic tissues, which are promptly destroyed, and its antiseptic properties are an additional safeguard against possible sepsis.

Indications for Hysterectomy and Abdominal Section in Puerperal Infection.—H. J. Boldt^{*} suggests the following indications for hysterectomy: "If, after a full-term delivery or an abortion, there are no conception products in the uterus,

and the patient has fever with exacerbations, chills, and a small and frequent pulse (120 to 140 or more); if careful observation should show that infection comes from the uterus alone, that organ being enlarged and relaxed in its consistence; if there is no evidence of peritonitis, the parametria being free; if streptococci are found in the uterus, and especially if the blood shows the presence of pathogenic germs. If there are decomposition products in the uterus which cannot be removed satisfactorily per vaginam, and if upon doing a Cesarean section the uterus is found septic, then an abdominal hysterectomy is indicated. Abdominal section and drainage is indicated in diffuse septic peritonitis when there is no evidence of an exudate in the pelvis. The adnexa are to be kept undisturbed, unless there is some positive indication to do otherwise.

Eclampsia.—Andérodias* reports a case of eclampsia with fatal results. The first attack occurred just after the completion of labor. The woman had shown marked general ichthyosis since three days after birth and had never perspired. Andérodias thinks the ichthyosis, if not the cause of the eclamptic seizure, at least predisposed to it and aggravated the trouble.

Death of Fetus from Rupture of Umbilical Artery.—A rare cause of death of the fetus is illustrated by a case of Schwaab.* The insertion of the cord was velamentous. Rupture of the membranes involved the umbilical artery, resulting in death of the fetus from hemorrhage.

Infection of an Intact Ovum in Utero.—C. Jeannin* has seen such a case. The abortion began four days after insolation. The amniotic fluid, withdrawn by a sterilized needle, contained bacteria of different species. The membranes seemed intact. The question arises whether they traversed the uterus from the intestines or some pre-existing focus, or whether they passed through the membranes from the vagina.

Diplostreptococcus in Puerperal Peritonitis.—M. Waltherd's** investigations of personal cases and literature show that the diplostreptococcus, though not a saprophyte, occurs with saprophytic characteristics in the vaginal secretion of healthy pregnant women, in their lochia, and in intestinal contents. It is found in pure culture in the inflamed endometrium or tubal mucosa, and in exudates of puerperal endometritis, salpingitis, oöphoritis, peritonitis, pleurisy, and pericarditis. It may extend from the endometrium over the mucous membrane of the tubes to cause a fatal purulent peritonitis. This differs from that caused by the streptococcus in being more gradual in the onset of symptoms of a general purulent peritonitis.

Errors in Diagnosis of Pregnancy.—Two interesting cases of error in diagnosis due to malposition of the gravid uterus are reported. P. Ségond** mistook a case of uterine for extrauterine pregnancy on account of fixed latero-version

of the uterus. At operation the condition was discovered and the uterus restored to its normal place. Abortion occurred long after from other causes. H. Varnier" diagnosed a latero-flexed gravid uterus as ovarian cyst. Laparotomy showed the true condition, the uterus regained its natural position as its contents increased, and pregnancy terminated normally. P. Bar" reports three cases in which development of the ovum in one horn of a normal uterus simulated, in the beginning of pregnancy, an ectopic gestation.

Medullary Narcosis.—Dolérís" favors shortening the second stage of labor by combining, with subarachnoid injection of cocaine, dilatation of the vagina and perineum by means of a bag. This limits the second stage to a few minutes, in one primipara three minutes, and permits an earlier anesthetization. In an operation for large pyosalpinx with extensive adhesions, traction upon the omentum and intestine was painful, although one and a half centigrammes of cocaine had been employed. In shortening the round ligaments in another case, freeing them and pulling upon adjacent nerve fibres caused pain, but this was not felt when they were cut. One centigramme of cocaine had been injected. Dolérís concludes that two centigrammes should be used in operations involving structures whose nerve supply comes from high up in the cord.

Uncontrollable Vomiting of Pregnancy.—From the continuance of vomiting after removal of an ovarian cyst, and from the absence of reported cases of uncontrollable vomiting of pregnancy when such cysts are present, L. Lapeyre" concludes that these cysts are not the cause of the vomiting. The latter is due entirely to the pregnancy and is quite as common when no cyst exists. Abortion is the only cure in urgent cases, leaving removal of the cyst until later.

Retention of the Placenta.—Ahlfeld and Staehler" state that this accident is due much more frequently to actual adhesion of the placenta than to simple retention, if the third stage of labor is properly conducted. It is usually connected with some pathological condition in pregnancy or labor, and is of frequent occurrence in placenta previa, in cases in which it has been noted before, in tympania uteri, eclampsia and nephritis, and in cases with abnormally shaped placenta. It is seldom the result of primary atony of the uterus, but may take place from secondary atony due to severe uterine hemorrhage. Simple retention usually follows rapid delivery of the child through a partially dilated cervix without laceration. Manual extraction is advised in all cases except when purulent endometritis exists. In these the writers think it may be better to tampon the uterus and await spontaneous expulsion of the placenta.

Spontaneous Gangrene of the Legs in the Puerperium.—E. Wormser" publishes such a case occurring in a healthy woman after a normal labor. Symptoms of phlebitis and thrombosis appeared on the sixth day post partum; on the

twelfth the feet became especially painful, and on the next day signs of gangrene were noticed. A line of demarkation formed two finger breadths above the malleoli, and amputation was performed thirty-nine days after labor, with recovery. The day before this an increase of the area of cardiac dulness and a systolic murmur over the base were noticed for the first time. Wormser believes that there had been an endocarditis without symptoms at the same time as the phlebitis, and to an embolus from this cause he attributes a thrombosis of the anterior tibial artery. He has found only fourteen other recorded cases of puerperal gangrene. In a later paper¹ he adds two others which he has discovered. G. Burckhard² contributes a similar case which he has observed. In his first paper, Wormser shows that puerperal gangrene may follow embolism from a diseased heart valve or from the venous system through a patent foramen ovale, or may be due to primary arterial thrombosis extending from the placental site through the iliac vessels to the aorta, and thus involving the arteries of both lower extremities. In the cases in which all the veins alone are obstructed, the increased coagulability of the blood during the puerperium may be an etiological factor. It is uncertain what influence the nervous element exercises, one case of Reynaud's disease being among the recorded cases. The invasion is acute in cases due to embolism, gradual in others. The gangrene is usually of the dry type, moist gangrene occurring only in cases with general sepsis. The pain is very severe, but usually diminishes as soon as death of the tissue begins. There is usually a distinct line of demarkation. Constitutional symptoms are due to the affection which leads to the gangrene or else to absorption from the affected extremity. The diagnosis depends upon the presence of pain, discoloration, and coldness, with loss of sensibility. The prognosis is good for life in those cases where there is not general sepsis and the process becomes limited. As this cannot be predicted, the prognosis should be guarded. As soon as a line of demarkation forms, the useless part should be amputated, the result of this operation being usually favorable. The only other treatment advisable is assisting the circulation, when symptoms first appear, by aiding the return flow of blood by elevation of the feet and by stimulating the heart.

GYNECOLOGY AND ABDOMINAL SURGERY.

Influence of the Ovaries upon Development of the Genitals.—By subcutaneous implantation after castration, Halban¹ shows that an internal secretion of the ovaries controls the growth not only of the uterus, but also of the vagina, external genitals, and breasts. After castration alone, both breasts and genitals show atrophy.

Ovarian Cyst in the New-Born.—O. Von Franqué² examined a child which died eighteen hours after birth. The left ovary showed a cyst as large as a pigeon's egg. The

pedicle was twisted at least three times. As there were no signs of inflammation, Von Franqué attributes the torsion to the movement of the fetus in utero. The other ovary exhibited microcystic degeneration.

Chorio-epitheliomata of the Vagina.—H. Schmit¹¹ publishes the history of a case in which, four months after expulsion of a hydatidiform mole, he removed two vaginal tumors. These were apparently chorio-epitheliomata, but curettings from the uterus showed no evidences of malignant disease, simply an interstitial endometritis.

Diagnosis of Cancer of the Body of the Womb.—M. Handfield-Jones¹ has found that in cases of corporeal cancer there is a stage of benign adenoma; that the scrapings are not perfectly reliable, owing to the tissue being only superficial and the deep part of the gland not being obtained; later scrapings, when the disease is more advanced, are therefore more reliable. Clinical signs are more valuable than microscopical evidence. The degree of malignancy varies much, and the disease may run a very slow course. Rapid increase in size of the body of the uterus is the most valuable sign in determining need for extirpation of the uterus.

Primary Carcinoma of the Fallopian Tubes.—K. Witt-hauer¹² reports, on account of the rarity of the condition, a case of primary carcinoma of both tubes in a woman 55 years of age.

Tuberculosis of the Uterus.—G. Michaelis¹³ publishes a case of primary tuberculosis of the cervix in a nullipara, 33 years of age, who had previously been healthy, but whose mother died from phthisis. The patient had had irregular hemorrhages for two months. By vaginal hysterectomy there was removed a uterus whose body was normal, but the mucosa of its cervix was covered with numerous papillary tuft-like excrescences. The epithelium at the external os was replaced by tubercular granulation tissue and giant cells. Few normal glands remained. The woman had remained in good health three and a half years after the operation. Michaelis' other cases are of secondary tuberculosis. He emphasizes the importance of differentiating primary and secondary tubercular lesions of the uterus. For primary disease conservative treatment is to be considered. If the uterine lesion is secondary, and the patient's general condition leads to a hope of ultimate complete recovery, a radical operation only is to be thought of.

Cystic Degeneration of Uterine Fibroid.—Knauer¹⁴ reports the removal from a woman 48 years old of a cystic uterine fibroid whose entire weight was about twenty-five kilograms. This includes the weight of about twenty litres of fluid which had been contained in the tumor. On account of the patient's general condition the operation was performed under anesthesia from Schleich's fluid. Recovery.

Congenital Hypertrophy of the Cervix.—A. Brothers¹⁵ describes a case of congenital hypertrophy of the cervix compli-

cated by prolapsus and bilateral pyosalpinx in a girl 17 years old. The cervix was eroded and protruded one inch from the vulva. The uterus and adnexa were removed along with the upper part of the vagina. The body of the uterus measured one inch and the cervix two and a half.

Clinical Importance of Polypus of the Cervix.—H. Keitler " describes two cases in which a polypus springing from the cervical mucosa had undergone malignant degeneration, while the pedicle and uterine mucous membrane were still unchanged. He thinks that this may be the origin of some cases of epithelioma of the cervix.

Giant-cell Sarcoma of Cervix.—R. Borrmann " describes the pathological findings in the case of a woman 30 years old who died nine days after an abortion at the fourth month, with septic symptoms and curettage. A giant-cell sarcoma of the cervix and metastatic growths the size of a fist in both ovaries were found. The presence of a corpus luteum of pregnancy near the centre of one of the ovaries showed that the growth of this tumor must have been extremely rapid, taking place chiefly after discharge of the ovule.

The Relation of Appendicitis to the Uterine Appendages.—A. L. Beahan " has found that a febrile disturbance during menstruation, with a swollen, tender appendix; obstinate constipation, and gas formation in bowel; painful, retarded menses; pain in lower segment of abdomen, especially in right side; loss of flesh, pallor or muddy complexion, peculiar nervous symptoms, as irritability and exhaustion, occurring in a more exaggerated form than is peculiar to the individual, make the probability of a diseased appendix very certain and its speedy removal imperative.

Vesical Hemorrhage.—George A. Brown " reports a case of vesical hemorrhage occurring during labor. The bleeding commenced some hours before the true pains came on, the patient was unable to urinate, and about half a pint of bloody urine was drawn off. Eight hours later more bloody urine was drawn off. The child presented by the breech and was delivered with little trouble. The urine gradually cleared up after delivery.

Stone in the Kidney.—Arthur Dean Bevan " is so fully convinced of the value of the X-ray as a means of diagnosis in kidney stone that he unhesitatingly says that a perfect skiagraph, with the proper amount of detail and differentiation, is of greater value as a means of diagnosis than an exploratory operation. Such a skiagraph will show whether there is a stone or not. It will show whether there is one or more stones. It will show which side the stone is on. It will show the position of the stone or stones.

A suitable penetration and differentiation of the tissues is obtained by using a large volume of Röntgen discharge from a low vacuum tube; exposure five or ten minutes, depending on thickness of the individual.

Nephropexy.—In the fixation of a loose kidney R. T. Mor-

ris" makes a flap of capsule including the larger part of the mesial surface of the kidney. This flap remains attached at the convex border of the kidney. The flap is drawn through a slit in the psoas muscle or in the quadratus muscle and is there sutured in place. This brings the bare parenchyma also in contact with the muscle or fascia, where it forms a firm connective-tissue attachment. The operation avoids the necessity for passing sutures through the parenchyma of the kidney. Morris has had no recurrences in his cases, so far as he was able to ascertain.

Pathology of the Placenta.—In investigating the subject of syncytial growths in the placenta, which Bulius and Fink considered characteristic of cases of eclampsia, E. Martin" examined six cases of eclampsia of nephritis, and thirty placenta of women without albuminuria or any chronic disease. The same condition was found in all the diseased placenta and in the normal ones after the seventh month. Martin concludes that it is characteristic of the mature normal placenta.

Injection of Paraffin for Incontinence of Urine due to Traumatism.—An annoying and obstinate complication of operations for the repair of vesico-vaginal fistula or other operations involving the neck of the bladder is the incontinence of urine which at times results. Artificial torsion of the urethra fails, in some cases, to provide a substitute for the injured sphincter of the bladder. In such an instance R. Gersuny" succeeded in accomplishing the desired result by the formation of a valve whose rigid walls consisted of tissue impregnated with paraffin. The patient had suffered from a vesico-vaginal fistula after delivery. Repair of this injury had been followed by incontinence of urine. An attempt was made to check this by torsion of the urethra, which sloughed at the upper portion. Gersuny failed in six operative attempts to repair this damage. The bladder was continuous with a large dilated cavity representing the beginning of the urethra, and into this the vesical mucosa fell in folds, partially occluding the opening. Under local cocaine anesthesia, Gersuny injected into the region surrounding this orifice melted paraffin. When hardened this formed a ring of infiltrated and distended tissue, whose narrow lumen was closed by the folds of the mucosa of the bladder. The immediate result was good, but, as some incontinence of urine was again experienced, the injection was repeated. Three months later the patient reported that the reinforced ring enabled her to retain her urine for five or six hours when moving about and for ten or twelve when recumbent. The early report of this case leaves open the question as to the permanency of the relief afforded, but there seems to be no reason for supposing that the paraffin would be absorbed. Injected in reasonable quantities it appears to have no injurious effect, neither causing inflammatory reaction nor exerting sufficient pressure to interfere with the local nutrition.

A New Operation for Vesico-vaginal Fistulae.—Grasso-

kovkozky " publishes a new and ingenious operation for the cure of vesico-vaginal fistula which was successfully tried in five cases. The usual methods of producing a new raw edge of the fistula are objectionable, because considerable tissue must be removed, and the difficulty, if not impossibility, of accurately splitting the vesico-vaginal septum. He proceeds as follows: A curved needle, armed with a strong silk ligature, enters the edge of the fistula at the junction of vesical and vaginal mucous membranes, and emerges in bladder. Of these ligatures about six are required, the number varying with the size of the fistula. When in position, traction is made upon these ligatures toward the operator and with a small scalpel the septum is split the whole circumference of the fistula. The traction upon the ligatures produces a funnel-shaped opening, and, according to the author, the splitting of the septum, usually a difficult and tedious step, is surprisingly simple and easy. This being completed, the third step of the operation consists in the introduction of an eyelet probe (forceps) into the urethra, entering the bladder and emerging from the fistula into the vagina. To this probe the six ligatures are fastened, whereupon it is withdrawn and the ligatures now project from the urethra. As the ligatures only comprise the vesical membrane, traction upon them must necessarily constrict the vesical lumen of the fistula and also project the membrane into the bladder. The final and remaining step of the operation consists in the closure of the vaginal opening with a deep interrupted suture, and the withdrawal of the six temporary sutures from the urethra.

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DISEASES OF CHILDREN.

Cerebro-spinal Meningitis, Bacteriological Findings in.—Menzer¹ reports the case of a 12-year-old girl in whom cerebro-spinal meningitis followed otitis media after scarlet fever and diphtheria. In the cerebro-spinal fluid obtained by lumbar puncture during life, as well as in the meningeal pus found at autopsy, streptococci were present. These cocci were chiefly intracellular in their distribution, and were cultivated and found virulent for mice. The intracellular position is unusual and may be characteristic of the meningeal pus.

Congenital Bone Defects.—U. Grosse^{*} reports the case of a girl 5 years of age with a congenitally absent tibia. The upper end of the fibula was fixed into a depression made in the intercondylar fossa of the femur, care being taken to preserve the epiphysis of the fibula. The clubfoot was reduced and fixed on the fibula in as nearly a normal position as possible. After complete consolidation between femur and fibula had taken place (in four to six weeks), the leg was put into a brace and the child was able to walk. The extremity developed well, the original shortening of $5\frac{1}{2}$ centimetres being reduced 2 centimetres in the course of two and one-half years. The fibula is greatly thickened. Without the brace the child is able to use this leg as a support and limp along.

A Food Similar to Breast Milk, Scientific Basis upon which to Construct.—A. Monte^{*} believes that the problem of the artificial feeding of infants will never be solved successfully until it becomes possible to imitate the composition of breast milk absolutely. The acidity of cow's milk is greater than that of breast milk; this can be overcome by the addition of sodium carbonate, in the proportion of five grammes to the litre. If whey instead of water be used to dilute the milk (1:1), four grammes of the carbonate are sufficient. It is only after the acidity has been corrected that cow's milk can be made to simulate breast milk in its action toward rennet. The use of whey as a diluent brings about much better results than does water as regards the casein and the soluble albumin in cow's milk, although the ideal is by no means attained. Since whey is a natural solution of milk sugar, it follows that its use is more rational than that of any artificially prepared lactose solution. The fats are very nearly equalized by the addition of whey, the results being far better than when more fat is added, as is usually done. All these advantages more than outweigh the fact that whey contains all the mineral elements in milk and so adds to the already superfluous amount of salts present. This whey mixture is best sterilized at 60°–70° C. for ten minutes, then cooled to 6° C. and kept there until used. No known artificial food can provide the infant with daily amounts of casein, soluble albumin, fats, sugar, and salts similar to those contained in breast milk. Consequently it is impossible to attain the same progress with an artificially-fed child as with a breast-fed one. But of all artificial methods of feeding, the dilution of cow's milk with whey is the one which, as nearly as possible, provides the proportions present in breast milk.

Franklin N. White¹ reaches the following conclusions in his study of the subject: 1. By the use of whey as a diluent of creams of various strengths, we are able to modify cow's milk so that its proportions of caseinogen and whey proteids will closely correspond to the proportions present in human milk. We therefore render it much more digestible and suitable for infant-feeding. 2. The best temperature for destroying the rennet enzyme in whey is 65.5° C. Whey or whey mixtures should not be heated above 69.3° C., in order to avoid the co-

agulation of the whey proteids. The percentage of whey proteids in the whey obtained was 1 per cent, while in the analysis of the whole milk approximately three-quarters of the total proteid was caseinogen and one-quarter was whey proteids. 3. On the basis of these analyses whey-cream mixtures were obtained with a maximum of 0.90 per cent and a minimum of 0.25 per cent of whey proteids in combination with percentages of caseinogen varying from 0.25 per cent to 1 per cent; of fats, from 1 per cent to 4 per cent; of milk sugar, from 4 per cent to 7 per cent. 4. The emulsion of fat in whey, barley water, gravity-cream, and centrifugal-cream mixtures were the same, both in their macroscopic and microscopic appearances. The combination of heat and transportation, such as sometimes occurs in hot weather, partially destroys the emulsion in all forms of modified milk, but this disturbance can be prevented by the simple precaution of keeping the milk cool during delivery. 6. Whey-cream mixtures yield a much finer, less bulky, and more digestible coagulum than plain, modified mixture with the same total proteids; the coagulum is equalled in fineness only by that of barley-water mixtures. The coagulum yielded by gravity-cream mixture and centrifugal-cream mixture is the same in character.

Floating Kidney and its Palpation in Childhood.—Knoepfelmacher believes that a floating kidney is often missed in children because it is not looked for. He has found it very satisfactory to palpate the kidneys of young infants through the rectum. Two cases are reported, 9 and 4 months old respectively, both fatal. In the older infant both kidneys were very movable, and the liver had undergone an axial twist, resulting in an abnormally low position of its anterior border. The intestines were normal. The second case had but one movable kidney—the left—probably the result of a congenital dislocation. The first case was one of acquired floating kidney.

Heredity of Tuberculosis, Experimental Studies in.—Friedman gives the details of some experiments which tend to show that direct infection with tuberculosis may occur from the paternal side alone, without the intervention of the mother. The disease can be transmitted from the parents: (1) through the maternal blood stream (the placenta) and (2) through the sperm at the time of conception. The first method has been proved possible in both animals and man. In order to prove the second, tuberculous semen must be demonstrated to contain active tubercle bacilli, and these must be shown to be able to enter the ovum without the aid of maternal factors. The author injected small amounts of diluted tubercle bacilli cultures into the vaginas of rabbits immediately after coitus, and prepared serial sections of the ova six to eight days later. In every case the bacilli had penetrated the ovum and entered its cells, but were never found in the mucous membrane of either uterus or vagina. This explains the fact that the offspring of a tuberculous father and a healthy mother may be infected, while

the mother escapes unscathed, showing a striking analogy to the occurrence in the transmission of paternal syphilis.

Leucocytes in the Digestive Diseases of Infants.—A. Japha* counted the blood cells in 22 healthy children under 1 year of age, and found that the average number of leucocytes present is 13,560. Of these 42 per cent are polynuclear, 54 per cent are small mononuclear, and 4 per cent are large mononuclear. The number and per cent of the various kinds of white cells are not influenced by the absolute weight of the infant. Examination of the blood in children ill with dyspepsia, gastro-enteric catarrh, atrophic conditions, follicular enteritis, and cholera-like attacks, proved the fact that in no case of intestinal disease are the lymphocytes increased beyond their normal number. Nor is it possible to differentiate the various kinds of intestinal diseases by means of leucocyte counts. Under certain circumstances a polynuclear leucocytosis is observed in the course of intestinal diseases, but it is a sign of poisoning with putrefactive products or the toxins of pathogenic bacteria. It is indicative of a severe affection, but not of prognostic value.

Mastoid Disease and its Complications.—Seymour Oppenheimer* gives a critical review of the literature of this subject. Among other things he mentions a communication by Cozzolino and Barrogo-Ciarella, who call attention to a new and pathognomonic symptom of chronic mastoid empyema—the rapid reappearance of pus after cleansing of the tympanum, and also by its always flowing in a single line over the inner wall of the cavity from the postero-superior to the postero-inferior segment. The author hesitates to accept this symptom as conclusive. A paper by Bar treats of the similarity between anterior mastoid abscess and furunculosis of the meatus. Eulenstein writes of percussion in the diagnosis of acute mastoid disease; dulness on percussion indicates the presence of a diseased area near the surface of the bone, the degree of the dulness depending upon the extent of the area involved. The absence of dulness, however, is no proof that the bone is not diseased, as the diseased area may be very small or very deep-seated. By percussion we are enabled to recognize mastoid disease earlier, and it is a valuable adjunct to the indications for opening the mastoid. Oppenheimer, from his own experience, questions the value of this sign. In regard to operative procedures upon the mastoid the following conclusions are formulated by Randall upon the study of 100 cases: 1. Wilde's incision is not good surgery. 2. Conservatism and expectancy are in order as long as there is no pus demonstrable outside of the middle chamber. 3. When rational signs of pus are recognized, all temporizing must cease and sound surgical principles must be followed. 4. A clean sweep of all diseased tissue must be made and sinuses must be explored. 5. Have a clear field before you in operating. 6. Good drainage must be established. 7. In chronic cases it is rarely sufficient to clean out the mastoid alone. Oppen-

heimer adds that the chisel and spoon should always be used in preference to any method depending on the trephine, burr, and dental engine, which have been employed to some extent.

One of the most important questions engaging the otologist to day is the determination, in advance of any operative procedure, of the danger points on the temporal bone, the relation of the sinus to the surface, and the nearness of the cerebral fossa to the proposed operative field. While much labor has been spent in seeking external evidences of these points, success has unfortunately not been attained, although general indications such as those mentioned by Okade are of value. He concludes from the study of 111 skulls that the anthropological form offers no trustworthy evidence of the presence or absence of the so-called dangerous temporal bone. The relation of the transverse sinus to the field of operation should be looked for, and unusual care taken when operating on the right side; if the mastoid process is unusually small; if the patient has not reached the age of puberty; and more care must be exercised in the case of women than of men. While these indications are but general, yet they present features of value and are necessary in forming part of the foundation for future work in this field.

These are but a few of the articles quoted by the author, there being quite an extensive bibliography for the year 1899 appended to his critical survey.

Otitis Media in Children, and its Treatment.—H. V. Würdemann protests with all his might against the general ignorance of, or indifference to, the seriousness and importance to life of inflammation within the ear. With Macewen he says: "I would rather have a charge of dynamite in my ear than a drop of pus." Barth, of Leipzig, found that out of 500 infants ill with various affections, 80 per cent had a lesion of the middle ear. Von Tröltsch found, in examining 47 petrous bones taken from unselected children, that the middle ear was normal in only 18; 29 ears showing varying degrees of purulent or mucous catarrh. Schwartz found the tympanum filled with pus in 2 out of every 5 examinations. Wreden found a normal middle ear in only 14 out of 80 cases in children. Porfick made 100 autopsies of infants, finding the ears normal in only 9 cases, there being unilateral otitis media in 13 and bilateral in 78. The author, on the strength of having seen several hundred cases, in a very large proportion of which previous treatment had been given by other physicians and in not one of which had a paracentesis been done at the proper time, makes the following statements: 1. Earache is but a warning of perhaps dangerous disease, the pain of which may be masked by opiates to the ultimate risk of the patient's life. 2. If the drumhead is much reddened or bulging, or if fluid is detected, it is advisable to incise the membrane at once before it bursts, as the character, location, and extent of the tissue destruction is thereby limited. 3. Pain is relieved at once by

the paracentesis; the course of the disease is shortened, the symptoms mitigated, and sequelæ prevented by this and appropriate after-treatment. 4. If the case is seen after spontaneous perforation, the hole in the drumhead will often be found to be too small or poorly adapted for proper drainage, and it may be advisable to enlarge it by paracentesis. 5. The little operation gives but temporary pain, and, if the physician does not make too much of a show, will be tolerated by any patient, who will be thankful for the relief afforded his symptoms. 6. Meddlesome after-treatment should be discouraged, as, when the diseased part is protected from further infection and the discharge not too frequently removed, the case will usually run a mild course.

The canal should be wiped dry and rendered aseptic by sublimate or boric wash, the paracentesis done under sufficient illumination by the head mirror and speculum, which should be in the hands of every practitioner, who should not hesitate to perform the operation in any case where an otologist is not available. A wick of iodoform gauze should be placed in the canal, to be taken out not oftener than twice a day for removal of the discharge by gentle syringing with warm boric acid solution, after which the canal is wiped dry, another wick of iodoform gauze inserted, and absorbent cotton placed in the canal to exclude the outer atmosphere. Attention to the immediate causes of the middle-ear affection should be given, general symptoms met by phenacetine, atropine, and quinine, the bowels moved by calomel and salines, and the nose and throat sprayed by warm alkaline solutions for cleansing purposes, and the nasal irritation and intumescence relieved by camphor-menthol or other appropriate spray.

In a professional experience of nearly twenty thousand patients, the writer has never seen, from his own hands or from those of others, any damage done by paracentesis of the drumhead for acute otitis media; whereas its indications are daily met with in the practice of the otologist, and so often in that of the general practitioner that he ought to be familiar with this branch of pediatrics and surgery.

Perityphlitis in Children.—P. Selter¹ agrees that perityphlitis occurs seven times more frequently in children (from 1 to 15 years) than from 15 to 30. The cases are often wrongly diagnosed at first, and therefore come to operation in a moribund condition. Appendicitis is far more common in childhood than is perityphlitis. He observed 28 cases, of which 11 came to operation and 1 had perforation of the cecum. The appendix is relatively larger and broader in childhood than in adult life, and its coat shows a greater wealth of lymph follicles, thus predisposing it to inflammatory processes. Of the 28 cases, 6 had general peritonitis, 11 had circumscribed abscess formation, and the remaining 11 recovered spontaneously without any apparent after-effects (2 have had relapses). If the abscess does not heal spontaneously, it burrows into Douglas' cul-de-sac and then fills the left side of the pelvis.

Foreign bodies are a rare etiological factor in the production of perityphlitis in children; fecal concretions, traumatism, and errors in diet all have a causative relation to the disease. The symptoms vary greatly, the only constant one being a resistance of the right pelvic wall, palpable through the rectum. As spontaneous resolution is possible, operation may be deferred one or two days, ice, opium, and fluid diet being given. Should the tumor increase in size and the symptoms continue, operation should be performed, even if general peritonitis be present. The author removed the appendix only in cases in which it was readily found, or if it had suppuration or would give rise to painful thickening and adhesions.

Prevention of Intracranial and Intravenous Complications in Suppurative Diseases of the Ear.—J. H. Woodward* says that clinically every otorrhea should be regarded as a consequence of invasion of the chambers of the middle ear by infective micro-organisms. We should remember that not only the tympanum but the antrum and the cells of the mastoid process are also component parts of the middle ear. It is inconceivable that an inflammatory process, either acute or chronic, should be limited to the drum. It is highly probable that the mastoid cells are more often invaded than we are accustomed to believe. It is therefore evident that we must search for the sources of an otorrhea not only in the drum, but also in the antrum and in the cells of the mastoid process. Every one who has critically examined the chambers of the ear in the various stages of chronic purulent otitis media must be convinced of two things: (1) the doubtful probability that advanced disease may be permanently controlled by treatment through the external auditory canal, and (2) the eminent desirability of a permanent eradication of the infective inflammation. There are seven objective symptoms for the mastoid operation which may be recognized by the general practitioner: 1. Bulging of Shrapnell's membrane, with swelling at the inner extremity of the auditory canal. 2. Persistent tenderness over the mastoid process. 3. Swelling of the soft parts over the mastoid process. 4. Granulations and fistulæ in the external auditory canal. 5. Persistent and relapsing fistulæ behind the auricle. 6. Persistent and especially offensive otorrhea. 7. Sudden marked diminution or absolute cessation of a chronic otorrhea, indicating that infection has attacked or is about to attack a vulnerable part. It should be borne in mind that the object of the radical mastoid operation is not to drain the inflamed chambers of the middle ear, but to remove the disease from every recess to which it has penetrated. Not only should the antrum and the cells be freed of the infection, but the tympanum should always be thoroughly curetted and the malleus and the incus should be removed when they are in a state of caries. Sufficient bone must be cut away to give the operator an opportunity to ascertain the precise condition of the various parts. This handling, however rough it may appear, does not necessarily

injure the hearing. Whenever the ossicles are so diseased that they must be removed, we shall find that the function of the ear had been destroyed some time before the operation was undertaken. The most thorough curetting of the middle ear is not incompatible with the preservation of acute hearing. The dangers incident to radical operation on the mastoid in uncomplicated infectious diseases of the middle ear have been exaggerated. Of course, after even thorough eradication of the infective process, radical antiseptic measures are essential.

Pyelitis from Eberth's Bacillus.—Carlo Comba' reports the case of a child who was suffering from a somewhat severe attack of typhoid. The acute stages of the disease were passed, and the patient appeared to be on the road to recovery, when suddenly a new train of symptoms appeared, consisting in a marked rise of temperature accompanied by intense pain in the right lumbar region, radiating downward toward the pelvis, which was so continuous that the child moaned constantly. This condition lasted eight days. The cloudy, acid urine was found to be albuminous and to contain pus, hyaline casts, and renal epithelium. The diagnosis of acute right pyelitis was readily made. A microscopical examination of the sediment showed the presence of a bacillus possessing all the properties of the Eberth bacillus and extremely virulent. Eight weeks after the first appearance of the renal symptoms this bacillus could still be found in the urine. An interesting point consists in the fact that the phenomenon of agglutination of the bacilli was found in the urine.

Rickets, its Pathogenesis and Treatment.—Eric Pritchard¹⁰ considers that the symptoms of rickets are such as can be explained by the presence of an excess of lactic and similar acids in the system. Excess of lactic acid can be generated when the food supply (carbohydrate chiefly) is relatively excessive, or when the available oxygen is relatively deficient. Infants fed on excessive diets can develop symptoms of rickets, although no element necessary for metabolism is absent from the food. *Absolute* excess is not necessarily implied. *Relative* excess—that is, relative to the powers of the organism to oxidize—is the essential condition. Infants of low vitality, with feeble powers of metabolism, may find the physiological dietary of a healthy infant excessive, and the same may apply to children living under different hygienic conditions. Breast-fed infants, no less than those who are hand-reared, may be overfed; and if weak stimuli to oxidation are combined with feeble vitality, the one class of feeding may confer no greater degree of immunity than the other. Diarrhea, Nature's first defence against excessive absorption, if long continued, is usually associated with emaciation and marasmus rather than with the typical symptoms of rickets; for this reason fermentable food stuffs, which require digestion before they can be absorbed, are probably less potent factors in the production of rickets than the soluble carbohydrates present in most patent foods.

The treatment of rickets, both prophylactic and remedial, may chiefly be considered from the point of view of alimentation and hygiene. The food must be adapted to the physiological requirements of the infant, and each case considered on its own merits. Every measure which evokes protoplasmic activity and encourages respiration and circulation will help to dispose of circulating nutriment in the manner most beneficial to the organism as a whole. In this connection the importance of muscular exercise should not be forgotten. The rachitic infant is suffering from oxygen hunger, hence all measures which encourage respiration (cold douches, rapid movements through the air, light clothing, low temperatures) will quicken vital processes. For acute and urgent symptoms (convulsions and laryngismus) inhalations of oxygen are obviously indicated. Any means which will induce the infant to breathe freely and deeply will have a similar if less striking result, especially when combined with cardiac stimulants. The hygienic and alimentary treatment of rickets is so eminently satisfactory that recourse to drugs is seldom necessary; but phosphates, phosphorus, and cod-liver oil are medicaments of proved value.

On theoretical grounds the author believes that salicylates are strongly indicated, and for the same reason that they are of value in rheumatism. Alkalies may rationally be prescribed for the neutralization of acid products of metabolism and to act as carbonic-acid carriers.

Scurvy, not Rheumatism.—J. P. Crozer Griffith ' says that while infantile scurvy is one of the easiest diseases to recognize and to treat, yet in a few cases it offers considerable difficulty, probably because the symptoms at first simulate those of other diseases, especially rheumatism. The author reports in detail 16 cases which illustrate this likeness to rheumatism. Hematuria is sometimes the sole symptom of scurvy, and a diagnosis may have to be based on it, especially if it disappear with the administration of orange juice. Although the cause of scurvy seems to be dietetic, yet there is no one dietetic fault which can be held responsible. Most often we find that scorbutic children have been fed on commercial foods—in a case reported to the American Pediatric Society, the simple omission of a patented food from the dietary was followed by disappearance of scurvy. There are cases on record in which the sterilization of milk has seemed to produce the disease, but the author thinks that the power of this factor is overrated. Sometimes the fault lies in the lack of proper proportion in the different elements of a food mixture, oftenest in a too low percentage of proteid. The factor undoubtedly varies with different children. With regard to the symptoms, it is most important to remember that the affection of the gums is usually not the earliest symptom, and that the disease may exist without it. Indeed, it is usually absent if no teeth have appeared. Pain somewhere, usually in the legs, is oftenest first seen, and it is due to this fact that so many mistakes in diagnosis are

made. Yet there may be scurvy without pain as a prominent feature. Treatment is simple. A proper alteration of the diet, or even the administration of fresh fruit juice, is sufficient to work a cure which seems almost miraculous.

Temperature. The, during the Stages of Incubation and Invasion of Measles.—E. Weill¹¹ and M. Péhu, from an examination of 63 cases, conclude: 1. That during the period of incubation the central temperature undergoes no change. Should fever be noticed, it is due to some coexistent pyretic disease. 2. During the prodromal stage the fever of invasion appears only when the mucous eruption comes. 3. There is no antagonism between measles and any other disease.

Uricemia in Children.—J. Comby¹² considers uricemia as arthritism in embryo. The most prominent symptoms caused are periodical cephalalgia and cyclic vomiting. As a rule the disease does not become marked until the second period of childhood; it is of more frequent occurrence in boys than in girls, among the rich and intellectual class than in the poor. The symptoms may affect the chief organic systems. 1. *Nervous system*: paroxysmal headache, ostealgia and arthralgia, eclampsia, cerebral excitement, insomnia, night terrors, neurasthenia, pseudo-meningitis. 2. *Digestive tract*: Cyclic vomiting, colic, diarrhea and constipation, muco-membranous enteritis, and intestinal "sable." 3. *Urinary tract*: renal and vesical lithiasis, albuminuria, glycosuria, hematuria, dysuria, spasms of the neck of the bladder, incontinence of urine, urethritis. 4. *Respiratory apparatus*: spasmodic coryzas, epistaxis, laryngitis, sibilant bronchitis, asthma-like attacks. 5. *Circulatory system*: tachycardia and cardiac arrhythmia, hypertrophy of the heart. 6. *Skin*: sweating, prurigo, lichen, eczema. 7. *Fever* of an intermittent quotidian type. In order to establish a diagnosis we must ascertain the heredity and the personal history, study the child's temperament, and examine the urine, in which we shall often find an excess of density, urea, uric acid, etc. The prognosis is not serious, but later attacks of arthritis, constantly increasing in severity, are to be feared. Hygiene and treatment have a marked influence on the prognosis. Diet should be chiefly vegetable. Hydrotherapy and exercise in the open air will secure a good skin action. The best medicines are the alkalies, bitters (*nux vomica*), laxatives when needed. The carbonate or benzoate of lithia can be used with advantage. Mineral waters are of service. Acute attacks are to be treated by absolute rest, the ingestion of water, and, in grave cases, the injection of artificial serum.

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ORIGINAL COMMUNICATIONS.

THE PREVENTION OF POST-OPERATIVE ADHESIONS OF THE
PERITONEUM.¹

BY

GEORGE GRAY WARD, JR., M.D.,

Adjunct Professor of Diseases of Women, New York Post-Graduate Medical School and
Hospital; Instructor in Obstetrics, Cornell University Medical College; Assistant
Attending Physician, Mothers' and Babies' Hospital; Fellow of the New
York Obstetrical Society, etc., etc.,
New York City.

IN choosing a subject upon which to address such a body of specialists as make up this Society, it is perhaps not strange for one of the newer members to feel a natural hesitancy in approaching any of the important obstetrical or gynecological problems which have been so ably and thoroughly discussed in the past by the Fellows, famed for their attainments and with reputations that are international. However, in selecting a topic I have been guided by three reasons which would seem a sufficient apology for encroaching upon your valuable time, viz.:

First: That the prevention of post-operative adhesions is still a factor which enters into every operation in which the surgeon invades the peritoneal cavity.

Second: That as the etiology of their formation, and there-

¹ Read before the New York Obstetrical Society, March 12, 1901.

fore their prevention, is a very complex problem and is yet somewhat in doubt, a discussion of this subject cannot but be of interest and profit.

Third: That one who comes in contact with patients after they have been subjected to peritoneal operations must surely be impressed with the fact that we have still much to learn before we can invade the peritoneal cavity without leaving that delicate membrane in a crippled condition in a large percentage of cases, as is evidenced by the fact that the patient, in many instances, still suffers from intra-abdominal pain, often worse than the original trouble for which she was operated upon; or, she is habitually constipated, with the train of symptoms referable to that cause; or, even worse, she may lose her life, not only days but months afterward, from the direful consequences of the presence of a band of adhesions.

In these days, when to open the abdomen is an operation which is regarded so lightly, not only by every house surgeon who has just completed his apprenticeship, but in many instances by the general practitioner, whose opportunities for major surgery must, at the best, be somewhat limited, it seems to me that a warning note should be sounded, pointing out the fact that there is *more* necessary for the welfare of our patients than to be able to open the belly, remove an organ or growth, and suture the wound without loss of life from hemorrhage or sepsis.

Also, those of us who are frequently and repeatedly operating—especially in hospital work, where we are less likely to be in reach of our patients' reproaches and laments afterward—perhaps become somewhat lax or careless of these remote results, as at the time of operating they do not appeal to us so vividly as does a spurting vessel or a torn intestine.

That the prevention of adhesions is a subject of the greatest importance no one will deny.

We know that their formation after operation is very frequent—in fact, the simplest uncomplicated cases, where there has been primary union of the abdominal wound and no rise of temperature or tympanites during the period of convalescence, may have adhesions form. This is in accord with the careful experiments conducted by Thomson,¹ one of his conclusions being that omental and intestinal adhesions follow perfectly aseptic celiotomies, and that parietal adhesions occur when the abdominal wound heals by first intention. This is also frequently proved clinically at second celiotomies.

The evil results of the formation of adhesions after operations vary from slight symptoms of no great import to one of the gravest and most fatal of post-operative sequelæ—namely, intestinal obstruction. The danger of this complication alone would render the prevention of the formation of adhesions of the utmost importance, especially when we realize that intestinal obstruction from this cause is not by any means rare, as all who do much abdominal surgery must testify.

Rohé¹ states that obstruction of the bowels causes between 1 and 2 per cent of the deaths following invasion of the peritoneal cavity, and he has collected 75 deaths from this cause in the literature. This agrees with the reports of other observers. Sir Spencer Wells² lost 1.1 per cent in his first 1,000 cases from this cause, and Fritsch³ places his mortality at 1.6 per cent.

In a series of 421 abdominal sections and 148 vaginal hysterectomies reported by Klotz,⁴ there were 31 cases of intestinal obstruction with 5 deaths. Thus, on an average, there was an obstruction once in every 18 cases.

Vander Veer,⁵ of Albany, had 3 fatal cases, due to adhesion of the loop of gut to the stump of a pedicle, in 145 cases of abdominal section.

Rockwell,⁶ in an analysis of 69 cases of acute intestinal obstruction from various causes, found that 34 per cent, or 24 cases, were due to the presence of adhesions.

A perusal of the literature reveals numerous reports of such accidents, showing how common is this complication and the great variety of sites that the adhesions may occupy. In the majority of cases where secondary operation or autopsy has shown the cause, it is found that the obstruction is due to abnormal fixation of the intestines by adhesions, or the compression of the gut by peritoneal cords or bands, inflammatory in their origin.

The most common form of obstruction, by far, is for an adhesion to occur between a loop of intestine and a raw surface, such as a pedicle stump, or an area denuded of its peritoneal covering by the separation of inflammatory adhesions, etc., during an operation.

A few of the observers reporting cases illustrative of this form are Coe,⁷ Ashton,⁸ Meredith,⁹ Ahern,¹⁰ Anderson,¹¹ Skutsch,¹² Tuttle,¹³ Wells,¹⁴ Ferguson,¹⁵ and Rohé.¹⁶

J. Ross¹⁷ reports a case due to the bowel becoming attached to the abdominal incision. Currier¹⁸ reports a similar case.

Another form is for the loop of gut to become adherent to the denuded surface left in the cul-de-sac of Douglas after breaking up adhesions in that locality. Wells" and Krug" both report cases illustrative of this condition.

Nieberding" cites a case in which the raw surface left after excising a portion of the omentum was the cause of the trouble.

Another form occurs after vaginal hysterectomy, Blake-man," Leopold," Reichel," Olshausen," Landau," and Coe" reporting such accidents.

And so we might go on, quoting many more instances of this condition, as the literature teems with them; but those we have mentioned suffice to illustrate the fact that adhesions may occur anywhere where the peritoneum has been injured, macroscopically or microscopically.

One is apt to infer that the danger of intestinal obstruction from this cause is only imminent during the period of convalescence directly following the operation, and that if we can get the patient safely through the second week, with the bowels moving, all danger from this complication is past. Unfortunately, this is not always the case, as, even when adhesive bands do not produce intestinal obstruction during the immediate convalescence, there are many cases on record where the band may cause an obstruction months, or even years, after the operation.

Burrell," of Boston, reports a case coming on five months after laparatomy, the patient being perfectly well in the interval.

Bidwell," of London, relates one which occurred five months after the operation, and another as late as four and a half years.

Shively" reports a case, the death occurring between five and six years after an ovariectomy.

There is no doubt that many fatal cases of obstruction after laparatomy are never recognized as such, and they are classed as deaths from "peritonitis" or intractable vomiting, especially if the site of the stenosis is high up in the small intestine.

It might occur to one's mind that, if the formation of adhesions is of such frequent occurrence, it is strange that we do not get intestinal obstruction in nearly every case of laparatomy; but it is a well-observed fact that obstruction rarely occurs except when the loop of intestine has become fixed by adhesion in an abnormal position, the normal relations of the coils having been disturbed by the operative interference.

Should the patient be fortunate enough to escape this fatality, she is more than likely to have a reminder of the presence of these adhesions during the rest of her life, in the form of pain, in varying degrees of intensity and in any locality where the adhesions may have developed. This is what so often dims the splendor of our so-called "successful" (?) operations.

It is true we may remove one cause of trouble and disturbance, but in many instances only to substitute another which may be as troublesome to the patient's enjoyment of life as the original complaint. This occurs with sufficient frequency to warn us to be cautious in our promises to our patients as to their ultimate freedom from all pain; and in advising operations which are not absolutely essential to life, the patient should be informed of this possibility. It is not uncommon that we must do a second laparotomy to relieve persistent pain following a previous operation.

Cases of severe pain necessitating this procedure are reported by Lawson Tait, "Odebrecht," Coe, and others. All who come in contact with dispensary patients who have been operated upon, can testify that this matter of pain after celiotomy is of serious and great importance. The amount of pain from an adhesion may be out of all proportion to its size and strength.

If the patient refers her pain to the site of an abdominal organ, as the liver, stomach, kidney, etc., she is frequently treated for disease of these organs, when, as a matter of fact, the trouble is not in the organs at all, but is due to adhesions in their locality.

The writer has recently operated upon a case in which one of the symptoms complained of was a sharp dragging pain in the right iliac region, which occurred whenever the patient turned over in bed. Laparotomy showed an adhesion extending from the appendix to the horn of the uterus.

Chronic constipation after an abdominal section is another common sequel, and, as if womankind were not sufficiently afflicted by this troublesome condition owing to their own carelessness and lack of habit, they are often inflicted with this burden through no fault of their own, after submitting to a laparotomy, and in a form which admits of no relief by correction of habits, as the mobility of the bowels is prevented by adhesions.

Enough has been said to show the desirability of preventing the formation of these post-operative adhesions, and in search-

ing for a means of prevention we naturally turn to a study of their etiology.

Etiology.—Adhesions between serous surfaces take place by the exudation of plastic lymph, which acts as a cement substance, and the production of which has been excited by some disturbance of the normal condition of the membrane.

Adhesions between two raw surfaces, or between a raw surface and a serous surface, are brought about by the natural process of the repair of tissue, there being a cell proliferation from the endothelial and the connective-tissue cells, with the formation of a network of new blood vessels arising from each of the coaptated-granulating surfaces.

That the formation of these adhesions is a rapid process has been proved by the experiments of Senn," who demonstrated that quite firm adhesions are formed between peritoneal surfaces in six to twelve hours. He also showed that where there has been traumatic irritation of serous surfaces adhesions undoubtedly form much more readily.

As far back as 1840 S. D. Gross " found that in dogs the intestines could become extensively adherent in a very few hours.

In recent years there have been very thorough and exhaustive experiments conducted by numerous investigators in Europe and America as to the precise manner of the formation of adhesions after operative work in the peritoneal cavity, with especial reference to devising means for their prevention.

The results of these researches show that all practically agree that adhesions can be produced by infection of circumscribed areas of peritoneum, but how they form between apparently uninjured and normal serosæ, under perfectly aseptic conditions, is a point in question.

This experimental work has yielded results in two directions. One set of investigators, of whom Kelterborn " may be mentioned as a representative, are of the opinion that the formation of adhesions, under these conditions, is due to infection in *all* cases—in other words, that when adhesions form where there has been no traumatism of the surfaces whatever, and under apparently aseptic conditions, bacterial infection in a mild degree must have been present; while the other set of observers, represented by Thomson," conclude that adhesions *can* come about without infection, at least experimentally.

Dembowski " made a number of experiments on dogs, cats, etc., and he ascertained that if the omentum be sutured to the

anterior abdominal wall it became firmly united within three or four days, and that the intestines never became adherent to the omentum. A small piece of iodoform gauze placed between the liver and abdominal wall was firmly adherent to the parietal peritoneum in a week, and the newly formed capsule of adhesions around the gauze was in turn adherent to the thickened visceral peritoneum.

He concluded that all foreign bodies and eschars from the thermocautery cause peritoneal adhesions, and that all sutures act as foreign bodies and cause firm union of the parietal peritoneum along their line of insertion; and, on the contrary, iodoform, blood clots, mechanical irritation, and antiseptic fluids do not provoke adhesions.

Küstner's " results led him to oppose some of these views. Kelterborn's " researches confirmed many of Dembowski's findings. He found that aseptic ligatures, however, did not provoke adhesions. He states that a single surface denuded of its endothelium in a healthy peritoneum is sufficient to cause adhesions, as the endothelium is not renewed after being destroyed. His general conclusions were that the formation of peritoneal adhesions on apparently uninjured serosæ is always due to infection.

Coe, " in an article on intrapelvic adhesions, concurs with Kelterborn in believing that the formation of adhesions in simple uncomplicated cases is to be referred to mild septic infection rather than to simple traumatism of the peritoneum.

Thomson " summarizes his results after most careful experimental work as follows:

1. Omental and intestinal adhesions follow perfectly aseptic celiotomies. Parietal adhesions occur when the abdominal wound heals by first intention.

2. Superficial defects in the peritoneum are without results as regards the formation of adhesions.

3. Sterilized foreign bodies (such as gauze) may lead to their formation if they remain too long within the peritoneal cavity.

Gersuny " states that hemorrhage into the abdominal cavity undoubtedly causes adhesions, and Klotz " showed that a distinct cause of intestinal obstruction was the adhesion of the bowel to a large organized blood clot.

Van Stockmer " found that adhesions formed in fifty per cent of the experiments in which he allowed a loop of gut to remain in contact with a raw surface.

The experimental work of Delbet, Grandmaison, and Bres-

set" admits of no doubt of the harmfulness to the peritoneum of antiseptic solutions. They found that solutions of carbolic and salicylic acids, bichloride and biniodide of mercury, are harmful to the peritoneum and by their irritation predispose to the adhesion formation. Iodoform and salol were found to have little antiseptic or irritating effect.

The experimental research work of Walthard," of Bern, conducted a few years ago, from its thoroughness and care, and from the important conclusions at which he arrived, is worthy of our careful study and will be quoted somewhat at length. Cats and rabbits were the animals used, and the most thorough and elaborate aseptic precautions were employed throughout the series of investigations.

His first work was to perform a supravaginal hysterectomy upon a number of rabbits, great care being taken that the peritoneal surfaces of the utero-vesical pouch should not be touched in any manner; the parts, however, were freely exposed to the air. At the postmortem it was found that adhesions had formed in every case between the peritoneal surfaces of the utero-vesical pouch.

He next operated upon six rabbits, turning the uterus out of the wound and keeping it and all the parts completely enveloped with gauze wet in hot salt solution, using great care only to expose sufficient of the organ to accomplish the operation. The moisture and temperature and protection from air were kept as constant as possible by frequently renewing the hot salt solution. At the postmortems of these animals there was no exudation and no adhesion, in any case, of the walls of the utero-vesical pouch. His deduction from these results was that apparently the injury of air contact seemed proved.

His next investigations were in reference to the effect of air contact on isolated areas. Five cats were used, and, having the abdomen covered with an impermeable material, a small incision was made, through which a portion of the omentum and the posterior surface of the bladder were drawn out, the remainder of the abdominal contents being closed from air contact by the rubber covering. These parts were left freely exposed to the air for a period of twenty minutes, and were then returned to the abdominal cavity and the incision closed. At the postmortem examination, made twelve days later, adhesions between the omentum, fundus of the bladder, and the abdominal incision were present in every case, and in no instance were there adhesions of the intestines,

which had been protected from air contact. A control experiment, in which the exposed parts were kept protected with hot salt solution, yielded perfectly normal conditions.

These experiments speak for the theory of the injury of the peritoneum by air contact.

He next proceeded to investigate the preventive effect of peristalsis on the formation of adhesions. A coil of intestine was exposed to air contact for twenty minutes, and then so folded as to bring serous surfaces together, and was fixed in that position with sutures. The necropsies showed adhesions between the parts, but that peristalsis tended not only to prevent each adhesion, but in some cases even to tear out the retaining sutures.

Walthard concludes from the foregoing experiments that *long-continued* contact with air so damages the serosa that the superficial layer of cells dies; and that if two serous surfaces, subjected to the above, are in contact for a long time, adhesions form between them, and if they are not in contact for a long time there occurs only a spongy exudation.

He next took up the question as to how the peritoneum can be damaged by air which has been rendered absolutely sterile by filtration of all infectious material and dust-carrying agents. There were two theories possible—one that air acted upon the peritoneum chemically; and the other, that its action was purely a physical one.

According to the researches of Kühne, Scholz, and Pflüger, "the air may act chemically, as the hemoglobin of the red blood corpuscles, which, in spite of the most careful hemostasis, are exposed at the site of the operation, can change the oxygen of the air into ozone, and thus, in this way, oxygen is set free and acts in the nascent state as a powerful oxidizing agent upon serous surfaces.

The theory that the air may do damage in a physical way was by its dryness, when the humidity of the air in the operating room is not at its highest point of saturation.

To investigate these questions Walthard had constructed a glass bell jar, in the top of which was a thermometer to record the internal temperature. There were two inlet tubes and one exit tube connected with the jar, so that a continuous stream of air or steam or any gas could be maintained in the jar at a uniform temperature while it enclosed the site of operation.

He first studied the effects of filtered air upon the peritoneum, and the postmortems showed always the formation of

adhesions, thus agreeing with the conclusions of Thomson that adhesions can form under absolutely aseptic conditions.

He then exposed the peritoneum to steam at 38° C., and in all his cases adhesions were absent, so that the conclusion was reached that by the prevention of *dryness* adhesions can be avoided. His results as to the chemical action of the component parts of the air (O, CO₂, and N) on the peritoneum were all negative as to the formation of adhesions, provided there was the presence of moisture. Dry air at 38° C. showed the formation of adhesions and macroscopical changes of the peritoneum.

Walthard's conclusions, in the light of his work, certainly seem justifiable that the damaging influence of the air does not only depend upon its carrying infection and dust, but also that air in a state of dryness, in long-continued contact with normal serosa, causes a necrosis of the superficial cells of the membrane by cooling, with resultant contraction of the blood vessels and diminished nutrition, which stands in etiological relation to peritoneal adhesions.

Walthard believes, also, that, after long contact with air, the resisting powers of the peritoneum are so diminished that the number of micro-organisms necessary to bring about a fatal peritonitis is greatly reduced.

His deductions were, as far as possible, proved clinically in a series of 146 laparatomies for various causes. The serosa at the site of operation was kept moist and glistening by being continually covered with gauze wet in hot salt solution. No wiping or drying out of the cavity was allowed, and in no case was there sepsis or pseudo-ileus. It was noticed that flatulence disappeared, in the worst cases, on the first and second days, while when dry asepsis was used previously flatulence lasted until the fourth or fifth day.

The practical application of his results would be that *dry* asepsis and *dry* toilet of the abdominal cavity should be abandoned, and that *moist* asepsis and, as far as possible, protection of the peritoneum from air contact, should be practised.

As sepsis is acknowledged by all to be a factor in the etiology of adhesions, even when present in a mild degree, the recent experimental work of Turck," of Chicago, as presented by him in a paper before the Thirteenth International Medical Congress at Paris last summer, has important bearing upon this subject, in so far that, in a number of carefully conducted

experiments upon animals, he showed the great value of heat applied in the abdominal cavity, not only as a preventive of shock, but as directly tending to prevent the lowering of the vitality and therefore the resisting power of the peritoneum to the invasion of micro-organisms.

He showed that, in animals, if the peritoneum were inoculated with staphylococci, peritonitis did not result, provided that heat was applied to the cavity. He states that when heat at 48° or 50° C. is applied within the abdominal cavity during the time corresponding to the exposure and manipulation of the viscera, the inoculation by pathogenic or non-pathogenic germs seldom results in infection and death.

It is obvious from a study of the results of the various experimenters, and of clinical experience, that the formation of adhesions after operation is not dependent upon any one etiological factor, but that they may form under a number of conditions, separately or in combination.

We may classify these causes under two heads—namely, sepsis and traumatism.

When there is sepsis it may be virulent or mild in character. If virulent, we have the adhesions formed as a result of general peritonitis with lymph and fibrous exudation. If mild, it may be in circumscribed areas, only sufficient to produce a localized inflammation with a plastic exudate.

If traumatism is the factor we may also have a severe or mild type. If severe, we have denuded areas in which the peritoneum has been stripped or destroyed in enucleating growths or breaking up pre-existing adhesions, leaving raw surfaces. In this type the adhesion formation is by the natural process of the repair of tissues by the proliferation of cells, and the formation of a network of blood vessels between the opposing surfaces.

In the mild type of traumatism we have a necrosis of the endothelial cells, which, according to Kelterborn," do not re-form when destroyed. This mild traumatism is generally microscopic in character, although it may be noted in many instances by the loss of the glistening appearance of the peritoneum. The formation of the adhesions in this class of cases I believe is also by the throwing out of exudate in Nature's efforts at repair.

This necrosis of the endothelial cells may be brought about in several ways. Excessive manipulation of the serous surfaces, as is necessitated in prolonged or difficult operations, is

a frequent cause. Chemical irritation from the use of anti-septic solutions in the abdominal cavity is a cause, but fortunately, at the present day, their use is rare, except when peroxide of hydrogen is used.

Desiccation of the peritoneum from the effects of dry-air contact, as shown by the previously quoted experiments of Walthard, is a frequent and potent factor in the death of the superficial cells.

Cold induced by the action of dry-air contact, and the lowering of the natural heat of the peritoneal cavity by prolonged exposure, causes a contraction of the capillaries and a subsequent death of the endothelial cells of the peritoneum, and, as pointed out by Turck," the lowering of the temperature causes a loss in the resisting power of the peritoneum to the attack of micro-organisms which it might successfully resist if the heat were kept up.

We may lay down the statement that the formation of peritoneal adhesions after operation is directly proportionate to the amount of sepsis, traumatism, dry-air contact, loss of heat, and raw surface there is present.

CLASSIFICATION OF THE ETIOLOGICAL FACTORS IN ADHESION FORMATION.

Adhesions of peri- toneum.	1. Sep- sis.	1. Viru- lent.	{ General peritonitis with lymph and fib- rous exudation.
		2. Mild.	{ In circumscribed areas only sufficient to produce a local- ized inflammation with plastic exudate.
	2. Trau- matism.	1. Severe.	{ <i>Denuded Areas.</i> — Adhesion formation by the natural pro- cess of repair.
		2. Mild.	{ 1. Excessive manip- ulation of parts: 2. Desiccation from dry-air contact. 3. Cold. 4. Chemical irrita- tion from anti- septic solution.
			{ <i>Cause.</i> — Pseudo-ileus and necrosis of endothe- lial cells.

Prevention.—The fact that denuded surfaces and pedicle stumps were early recognized as one of the most frequent causes of intestinal obstruction from adhesions, has led to many suggestions as to the prevention of this complication.

A. Martin " has advocated brushing over denuded areas and pedicle stumps with sterilized olive oil just before closing the abdomen, and R. Stern " has covered the raw surfaces with collodion. R. T. Morris " believes that adhesion formation can be prevented by covering the injured surface with aristol. He states that aristol is insoluble in serous fluids, and that it quickly forms a protective covering with the coagulated lymph, which cannot be brushed off. He bases his belief upon experimental work on rabbits.

Fritz Baum " has made experiments on dogs in which he has covered raw areas with animal substances, using a cloth made of catgut, gold-beater's skin, and prepared animal peritoneum.

As the cul-de-sac of Douglas is a frequent site of a denuded surface of peritoneum after breaking up adhesions in that locality, it has been advocated by Kelly " to fix the uterus by suture in a position of retroflexion, so as to close the entrance to the cavity and thus prevent prolapsus and adhesion of intestine.

Werth " advises distending the bladder with boric acid solution for the first few hours after operation, to prevent the intestine from falling into the cul-de-sac, when raw surfaces have been left in that region.

Reichel " believes that the normal peristalsis is sufficient to overcome newly formed adhesions, and he regards the various methods taken for their prevention as useless refinements.

The utility of many of these measures is doubtful, and the impracticability of others may be objected to, but probably one of the most valuable procedures in this condition is the abandonment of the mass ligature for the individual ligation of the vessels in a pedicle, and the covering of its raw surface by the suturing of the peritoneum over it, as advocated by Lewis Stimson " in a paper before the American Surgical Association in 1889.

Another method of value is that suggested by Senn, " of covering raw surfaces with grafts of omentum wherever possible.

It is recognized, of course, that it is impossible to prevent the re-formation of adhesions after the removal of extensively adherent growths and adnexa.

As the avoidance of sepsis, whether it be of a virulent or a mild type, is of prime importance in the prevention of adhesions, it is scarcely necessary to say that the most absolute

adherence to the rules and technique of surgical cleanliness must be followed.

We know that it is practically impossible to absolutely exclude all germs from the abdominal cavity at an operation. For instance, the complete sterilization of the living skin is not possible, according to Harris' experiments at the Johns Hopkins Hospital. Likewise to render the air of the operating room sterile is not feasible, so long as the operator and his assistants must breathe.

Therefore it is not the complete removal of all bacteria that enables us to accomplish the invasion of the peritoneum without apparent infection, but it is the resisting powers of the tissues that are our aid.

The less we impair the vitality of the various tissues by prolonged exposure, lowered temperature, and traumatism, the less infection we will have; therefore we must not only remove all bacteria possible by methods of cleanliness, but we must also avoid lowering the vitality of the tissues by rapidity of operation, avoidance of traumatism (mechanical and chemical), by keeping up the body heat, and the prevention of the desiccation incident to dry-air contact, so that the home-guard army of leucocytes may be kept active and vigorous, in order that they may be able to repel the bacterial army of invasion which is threatening the organism.

The time element I believe to be of the utmost importance. Everything that will shorten the time of exposure of the peritoneal cavity to air contact should be employed. Technical operative skill is here essential. Thoroughly trained assistants and perfect organization and preparation play no small part in the prevention of adhesions, by materially limiting the time of exposure of the peritoneum to the contact of the air with its desiccating and cooling effects.

Unnecessary traumatism, especially of the intestines, by excessive manipulation, should be guarded against, whenever possible, by the employment of the Trendelenburg posture and the careful ante-operative preparation of the bowels to prevent their distension by gas. The avoidance of rubbing with sponges and the use of antiseptic solutions is obvious.

Much handling of the bowel predisposes to subsequent paralysis or pseudo-ileus; and in view of the action of peristalsis on the prevention of adhesions, a very slight impediment, as a recently formed adhesion, will result in a serious and perhaps fatal obstruction if the adjacent bowel remains paralyzed for a few hours.

I believe that the protection of the peritoneum from the drying action of the air should be kept constantly in mind, and the use of *moist* asepsis instead of *dry* asepsis should be employed. Gauze sponges wet with hot normal salt solution (115° F.) should envelop the exposed parts as completely as practicable, and the air of the operating room should be kept at the highest point of saturation. The loss of heat should be prevented by the frequent renewing of the hot saline, and by the use of the Trendelenburg posture and limiting the size of the abdominal incision, as these measures avoid the unnecessary exposure of the viscera.

The size of the incision should be as small as is consistent with rapid work and the avoidance of traumatism.

Before closing the abdomen it is necessary that all blood clots should be removed, and thorough hemostasis secured to prevent the subsequent formation of clots, as adhesions may form between an organized clot and the intestines.

I am of the opinion that one of the most important measures for the prevention of intestinal obstruction from adhesions is the replacement of the loops of intestine and the omentum in their proper relations. As has been previously mentioned, it is the adhesion of a loop of intestine in an *abnormal position* that is the cause of obstruction.

The filling of the abdominal cavity with hot salt solution before closure of the incision, so as to float the intestines and thus allow them to adjust themselves to their normal relations which have been disturbed by the manipulations of the operator or by posture, was first advocated for this purpose by Malcolm," of London. This procedure, I believe, accomplishes this object better than any other method, and, as it is also a powerful stimulant to the patient, it should be employed in every case.

Great stress has been laid upon the after-treatment of laparatomized patients for the prevention of adhesion formation.

The most notable measure is, probably, the employment of early catharsis to provoke active peristalsis and thus prevent the intestines from becoming adherent. This method is of value provided that it is employed early, as we know that the adhesions form very quickly and can become quite firm within twelve hours.

In actual practice it is not always possible to accomplish this result as early as we would desire, as the nausea and vomiting incident to the anesthetic, and the temporary paralysis of the

bowel, which conditions are frequently present, interfere. Often the cathartics cannot be retained, and, should they be, they are impotent. In such cases I resort to the *early* use of the copious high enema in conjunction with the cathartic.

The employment of oxygen to inflate the intestines, as recently advocated by Cleveland," must be of great value in breaking up recently formed adhesions, and I would suggest that it should be employed as an *early* rather than as a late resort, and in the Trendelenburg posture.

Free motion of the patient after a laparotomy is undoubtedly a preventive of adhesions. The patient should be encouraged to frequently change her position in bed during the early hours after the operation, as then the newly forming adhesions are broken up and the intestines will be more likely to assume their proper relations.

The plan of adjusting the relations of the viscera by motion is not a modern idea by any means, as in a work published in 1702, entitled "A Compleat Body of Chirurgical Operations, Containing the Whole Practice of Surgery," by M. de la Vanguion, M.D., of Paris, it is remarked, after giving directions as to the manner of repositing prolapsed guts in accident cases, that "there is no necessity of shaking the body, as the Ancients did, to restore the guts to their place."

It is well to remember that free motion of the abdominal contents should not be prevented by the use of a tight abdominal dressing.

A summary of the foregoing means of prevention is as follows:

1. The attainment of asepsis as perfect as is possible, by the rigid adherence to the most modern methods of securing surgical cleanliness.
2. The avoidance of raw surfaces and pedicle stumps by covering them with peritoneum or grafts of omentum, and the abandonment of the ligature *en masse*.
3. Protection from dry-air contact by the employment of *moist asepsis* instead of *dry asepsis*, and keeping the exposed parts covered whenever possible.
4. The time element—rapidity of operating by technical skill, thorough preparation, and trained assistants.
5. Keeping up the heat of the peritoneal cavity by frequent renewal of the hot salt solution (115° F.) and by protection of the exposed parts.
6. Avoidance of excessive manipulations of the intestines by

technical skill, proper ante-operative preparation of the bowels, and posture, to prevent pseudo-ileus.

7. Replacement of the loops of intestine and omentum by filling the abdominal cavity with hot salt solution before closing, and thus floating them, that they may more readily adjust themselves in their proper relations.

8. Free motion of the patient after the operation to be encouraged instead of prohibited.

9. Early use of the high enema (during the first twelve hours) in conjunction with cathartics, and, on failure, the prompt use of oxygen in the Trendelenburg posture.

Conclusions.—My study of adhesion formation and the best means of their prevention leads me to the following conclusions:

1. That peritoneal adhesions after operation result from several causes.

2. That, therefore, we cannot depend upon any one preventive method, but, recognizing their multiple etiology, we must employ all the details of operative technique that are necessary to offset the various causes.

3. That this necessitates a technical skill that can only be attained by a long apprenticeship and a thorough training in abdominal surgery.

I am well aware that many of the details that have been mentioned and emphasized to-night are what every qualified surgeon regards as among the first principles of the technique of abdominal surgery, but they are so many, and yet so important, that a review of them and an emphasis of their individual importance cannot but act as a stimulus to spur on each laparatomist to still more thorough and perfect work.

As the presence of post-operative adhesions so often eclipses the success of the most brilliant operators, the importance of their prevention, and the complex and difficult technique that this necessitates, emphasize the fact that it is only by long and thorough apprenticeship in abdominal surgery that a man is competent to do such work.

In my belief it is the surgeon who most conscientiously looks after *all* the details who will have the fewest cases of post-operative adhesions with their unfortunate sequelæ.

280 WEST FIFTY-NINTH STREET.

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INTRAPELVIC INFRAVAGINAL PERINEORRHAPHY WITHOUT LOSS OF TISSUE.*

BY

A. GOLDSPOHN, M.D.,

Professor of Gynecology, Chicago Post-Graduate Medical School; Senior Gynecologist to the German Hospital; Attending Gynecologist to the Post-Graduate and Charity Hospitals of Chicago.

(With nine illustrations.)

HENLE and Luschka,¹ many years ago, gave some of the most correct and useful descriptions of the anatomy of the structures that compose the female pelvic floor, and in 1883 Friedrich Schatz² clearly pointed out the illusions about the external perineum and the unimportant functions of the rather imaginary perineal body. He was led to this by the frequent observation, on the one hand, of a rectocele back of an uninjured external perineum, and, on the other hand, by seeing the not infrequent retention of a uterus in normal position in cases when the so-called perineal body (not the true pelvic floor) is torn to or through the sphincter ani. The same very significant observations have paraded before the eyes of every gynecologist since that time, and they should have resulted

* Read before the Chicago Gynecological Society, March 18, 1901.

earlier in a general appreciation of the levator ani muscle and its associated fasciæ as the all-important structures to deal with, and in a universal adoption of surgical procedures for repair of injuries to the female pelvic floor that not merely profess to deal with the fundamental structures, but do so actually and in an efficient manner. Nevertheless the principal current operations for this purpose are still of the Hegar, Freund, Emmet, Tait, and August Martin types, with numerous modifications. All of these are, in the main, superficial procedures that aim chiefly at getting a good cosmetic result, removal of the cicatrices within the vagina from the lines of the previous lateral tears, and to overcome the rectocele by pulling down its summit forward or laterally, which accomplishes this only partially or temporarily. The best that can be accomplished, in my opinion, by these operations, and that is mostly realized by those that make the most extensive and deep denudations in the lateral sulci within the vagina and place deep sutures entirely within the vagina (not from the outside skin or vulvar surfaces and reaching never so deeply inward), is to make some lateral reunion between the vagina at some more auspicious point upon its resected posterior wall and the inner edge of the receded levator ani and pelvic fascia of the same side. The central portion of the posterior vaginal wall thus remains used as a patch to fill in the remaining space between the lateral descending inner edges of the sling of levator ani and associated fasciæ. Clearly this cannot make so durable a result as can readily be had by eliminating the intervening patch of vagina entirely and bringing the opposing inner edges of the bearing structures into actual direct union with each other beneath the vagina, temporarily elevated. Dr. T. A. Emmet entertained very wholesome views from the beginning of the importance of the pelvic fascia as a support to the internal generative organs and their afferent and efferent vessels; and of the older standard perineorrhaphies, his engages this structure the most readily. And in the substantial modifications of it as made by W. G. Wyllie,³ C. P. Noble,⁴ and H. A. Kelly,⁵ the levator ani and associated fasciæ are singled out more or less and actually engaged at least in a good bilateral union with the resected posterior vaginal wall.

Anatomists strangely disagree in their descriptions of the levator ani muscle. As R. L. Dickinson says in his admirable "Studies of the Levator Ani": "It is curious to observe how

grossly misrepresented this muscle has been. Gray, Savage, Weisse, Lusk, and others depict the fibres as running plump into the vagina and rectum. And Hart's fine Atlas (Plate 19) shows the anus opening on the tip of the coccyx and stealing space from the levator. One commonly meets with the idea that the levator is a kind of muscular funnel tapering toward the anus and serving to pull it directly upward after defecation. This is absolutely untrue. The muscle rather resembles a horseshoe. It is like a sling attached to the pubis in front, its sweep reaching horizontally backward to encircle the rectum and vagina like a collar. Its action in women is to drag the lower ends of the vagina and rectum forward level to the symphysis."

For the anatomy of these parts I would refer the reader to modern, accessible, and seemingly correct studies by McClellan, Dickinson, and Byron Robinson.* The part of the levator that concerns us in this connection is a web-like sling whose two lateral portions originate about 2.5 centimetres apart from the posterior surface of the symphysis and body of the pubic bone and adjacent pelvic fascia, and, passing downward and backward around the vagina, decussate with each other to a small extent in front of the rectum, to a greater extent posterior to it, and further backward they are inserted into the median tendinous ano-coccygeal ligament. The lower ends of the rectum and vagina lie in it as in a sling, whereby their perineal curve is maintained near their external orifice, and, by its voluntary sphincter-like contraction, the latter are drawn temporarily still further toward the pubic arch.

Dickinson found, by inviting contraction upon a soft wax phallus introduced into numerous vaginæ, that its action does not begin until about 1.5 centimetres within the plane of the hymen, and increases further inward, and that it has an average strength to lift ten pounds, and in exceptional cases as much as twenty-seven pounds by forcible voluntary contraction. He says that excessive development of its inner portions is sometimes the cause of vaginismus, dyspareunia, and has even made an anesthetic necessary for separation during coitus.

From the distinctly intrapelvic location and course of this muscle, and from the fact that no portion of the skin surface of the perineum is less than 2.5 centimetres outside of it, and more in fat subjects, it is clear that any actual or anatomically correct surgical repair of it must necessarily be done from

within the pelvic cavity and beneath the posterior and lateral vaginal walls, which may be resected to the required extent, but really need only to be temporarily elevated and then allowed to adjust themselves in longitudinal folds upon the bridge constructed between them and the rectum, by direct union of the opposing but receded inner edges of the levator ani muscle together with those of its fasciæ. This is the procedure which I advocate and have practised often with much satisfaction. There is only one other truly intrapelvic and infravaginal operation upon the levator ani muscle—*i. e.*, that devised by our distinguished colleague, M. L. Harris.¹⁴ This consists of resection of the injured side of the levator ani alone, with no definite attention given to the associated fasciæ. This procedure depends, as Dr. Harris himself says, upon the theory that muscles are intended to be in constant active tension and to leave but little of such duty to be performed by the aponeuroses or fasciæ that so largely accompany them. With this view I am forced to disagree as an assumption that is not borne out by general observation.

1. For any muscle that does not get rest at quite frequent intervals tires out and relaxes.

2. The fact that in every part of the flexible pelvic floor and abdominal walls the muscles are associated with some fascia or aponeurosis speaks for the importance of the latter to resist the constant intra-abdominal pressure, and where gravity also comes especially into play, as on the lower abdominal walls, the fasciæ are especially strong.

3. Our surgical experience upon the abdominal walls abundantly teaches us that careful individual coaptation of fasciæ or aponeurotic structures insures against subsequent weak spots, whether we unite the muscles so carefully or not.

Therefore, with reference to the female pelvic floor, I must contend, with most men who have spoken on the subject, that the constant holding of the internal generative organs and resistance to intra-abdominal pressure is done by the pelvic fasciæ between which the levator ani muscle is located, and that this muscle is rather to be viewed as a voluntary tensor or adjunct of the fascia. Again, mere resection of the levator ani beneath one or on both sides of the vagina, without special approximation of its two lateral portions in or near the median line, beneath the posterior vaginal wall and in front of the rectum, will be unable to exert sufficient excluding force there to permanently subdue a well-developed rectocele that claims

ownership by possession. Furthermore, all anatomists describe the levator ani muscle as a web-like structure composed of bundles of muscular fibres loosely aggregated together, with areolar tissue and even fat particles intervening between them. It is evident that the end-to-end union of such a muscle by sutures will often be very difficult and unsatisfactory unless its associated fascia is also resected or shortened with equal care. Therefore the operation of Dr. Harris does not tempt me to leave my own, above alluded to, upon which I published a short article in *Medicine*, July, 1897, with the same title, which I have performed during the past nine years in a very



FIG. 1.—General outline of the levator ani muscle and ligaments of the pelvic floor. Taken from Luschka.

large number of cases, mostly in conjunction with various major and minor operations, with very satisfactory permanent results. The technique is as follows:

With the sharp point of a scissors passed under the skin, a rounded incision resembling an arc of one-third to one-half of a circle or of an ellipse is made through the skin near the muco-cutaneous junction, terminating at the posterior ends of the nymphæ or near the remnants of the hymen (Fig. 2). This flap is dissected up in the beginning by careful clipping of connective-tissue bands in small parts with a scissors that has rounded ends and is always directed against the tactile surface of a finger of the left hand placed on the upper side of

in Fig. 3. By thus constantly estimating the thickness of the flap between the scissors and the finger, we can take the thin muscular vaginal wall, along with its mucous membrane, without having to introduce a finger into the rectum. Beyond



FIG. 2.—First incision on the skin side of the muco-cutaneous junction, terminating near the remnants of the hymen.

the cicatrized portions the posterior and lateral vaginal walls are usually readily raised by means of a finger tip covered with gauze, counterpressure being here also carefully made at every stroke by the finger on the upper side of the flap within the vagina; and the detachment is continued inward six to eight centimetres from the plane of the hymen (Fig. 4), and at least half-way up on the sides, a little higher usually on the

side where the levator and its fasciæ have been injured chiefly and have receded the most. When the separation of the vaginal flap is sufficiently extensive, if the venous hemorrhage is marked it is well to introduce a gauze sponge into the bottom of the wound and compress it through the vaginal flap



FIG. 8.—Detachment of posterior vaginal wall as a flap, assisted in the cicatrized area by clipping connective-tissue bands with a curved blunt-pointed scissors, a finger in the vagina above the flap constantly estimating the thickness of the flap, to avoid injuring the rectum.

for a minute. Next a full-curved needle of not more than six centimetres total length, with an oval (catgut) eye and armed with a long No. 3 formalized and boiled catgut thread, is grasped with a good needle-holder that does not permit the needle to roll, is carried to the bottom and left side of the wound, its

point being covered with the tip of the left index finger that serves as a guide. As the levator is not readily detected at that depth of six to eight centimetres inward from the plane of the hymen, a liberal grasp of soft parts is taken *en masse*



FIG. 4.—Detachment of posterior and lateral vaginal walls by both index fingers inserted to a distance of from six to eight centimetres.

from the left lateral wall by passing the needle from the front backward; and as the needle point must then emerge in dangerous proximity to the rectum, the latter is carefully and successfully pressed backward and to the right side by the guiding left index finger, which has been turned in a prone

position, and the needle point emerges upon the nail of that finger, as shown in Fig. 5. The finger is then again turned with its palmar surface to the needle, and guides the latter forward and into the grasp of the needle-holder to be drawn through. Then the needle is again carefully adjusted, near



FIG. 5.—Grasp of left lateral parts for the first buried suture, five to six centimetres inward from the plane of the hymen, in the needle, whose point is brought out upon the nail of the guiding finger that holds the rectum aside.

its base, in the needle-holder, and carried, with its point covered by the tip of the guiding finger, to the bottom of the wound on the right side, and then held until the finger (left index) has turned prone and carefully gathered the rectum and holds it backward and toward the left side; then, with its

point starting from the finger nail, as shown in Fig. 6, the needle is made to take a liberal grasp of the right lateral soft parts from behind forward—the guiding finger being now carried forward to enable the needle to emerge beneath the elevated vaginal flap and to conduct its point into the grasp of the needle-holder again. A second round of the suture is next



FIG. 6.—Grasp of corresponding parts on the right side in the needle, whose point starts from the nail of the guiding finger that again holds the rectum aside.

made with the needle precisely as before, grasping deeper where the first one caught possibly less or more yielding structures, and then the suture is drawn up tightly and tied in the bottom of the wound, when the bleeding becomes mostly checked. Neither end of the thread is cut off. But after the one in the needle has made two or three more similar rounds of continuous sutures in the same manner, it is again tied with

the free end. Sometimes five such sutures and two knots unite the important holding structures sufficiently to within two centimetres of the outer skin level, but usually two or three more such sutures and another knot are required to complete this the buried part of the suturing, which leaves a vulvar and skin wound about two centimetres in depth (Fig. 7) to be closed by external, transverse, interrupted sutures of silkworm gut tied upon the coaptated skin edges and cut off short.



FIG. 7.

FIG. 7.—Flap of posterior vaginal wall adjusted spontaneously in folds upon the constructed bridge beneath it, and superficial external wound ready to be closed by interrupted transverse sutures.



FIG. 8.

FIG. 8.—Showing operation completed.

In the first two buried catgut stitches that precede the first knot, only latero-posterior tissues are caught and brought into direct union near the median line, without any areolar submucous tissues from the front of the rectum and under surface of the flap being caught in the sutures. But after the first knot has been tied a slight grasp of these anterior and posterior parts is caught upon the needle every time it passes from one lateral grasp to the next opposite one, in order to prevent the

formation of dead spaces and to thoroughly arrest the venous oozing. But these intermediate portions of submucous tissues are so slight that they cannot interfere with actual, direct, and broad coaptation of the lateral important bearing structures. That the latter are actually thoroughly engaged in this deep and purely transverse suturing is made certain, first by tracing the inner edges of the receded deep pelvic fasciæ between which the levator ani muscle lies, and which furnish the best guide to it, with the important guiding left index finger, and, secondly, by testing the degree of resistance offered by the tissues caught upon the needle at each stitch. After the completion of the buried catgut (intrapelvic) suturing, the flap of posterior vaginal wall lies spontaneously adjusted into longitudinal folds upon the bridge which has been constructed beneath it, and its front folded edge usually projects as a little conical redundant tip that is best cut away. The external superficial wound then remaining is in parts that have nothing of importance to hold, and, aside from holding the labia minora in contact to prevent the free entrance of air and dust into the vulva and vagina, their union serves chiefly a cosmetic purpose. This wound is represented in Fig. 7, and is closed by interrupted transverse silkworm-gut sutures, the first one of which is passed carefully through the folded or puckered edge of vaginal wall above, as shown in the figure. It is clear that the parts brought together and depended upon for support in this operation are not influenced by separation of the patient's legs; and it ought to be very clear also to every one that when such separation of the legs does compromise the result of a perineorrhaphy, the operation has been performed upon external structures that have nothing to do with the pelvic floor proper and never can be made to serve for it.

In cases where a complete tear exists through and beyond the sphincter ani, the proctorrhaphy and reunion of the sphincter are made first and the operation upon the pelvic floor follows. In doing the former I have accepted the material improvement of turning down a flap from the edge of the rectal tear into the bowel, in place of merely denuding this edge as was formerly done. This was first published by Hirst," of Philadelphia, then by H. A. Kelly " and by Ristine," all in 1899. This has the marked advantages that all the sutures can be kept outside of the bowel lumen, and that the bowel contents are nowhere given an opportunity, by reason of the intact intervening flap, to insinuate themselves into the sutured

area and cause the little recto-perineal fistula that sometimes resulted formerly, even when the sphincter united.

In uniting the sphincter ani, it is important to dissect out its torn and receded ends and to reunite them carefully by fine approximation sutures reinforced by a tension suture. The importance and technique of dissection and individual approximation was first made clear by Küstner," and a year later presented by H. A. Kelly," who shows the tension suture

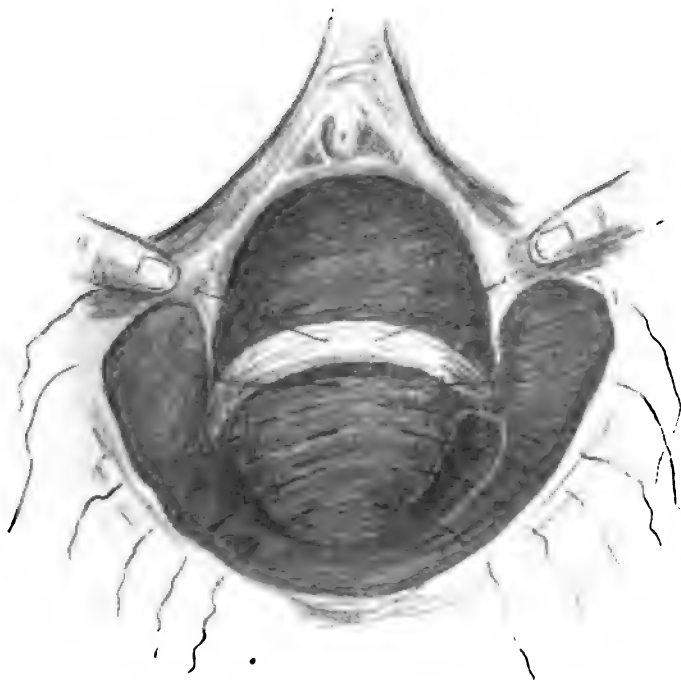


FIG. 9.—Taken from Emmet's book, showing that all the sutures enter and come out on skin surface, and that none of them take in the bottoms of the sulci and cannot bring the lateral walls of the sulci into direct contact. To accomplish this a set of buried sutures would first be needed taking in, on both sides, the tissues bounded by the light line around the left sulcus.

entering into the skin near one of the sphincter ends, then passing up and around the entire area involved in the proctorrhaphy, and emerging from the skin near the other end of the muscle. This important suture is placed before any of the coaptation sutures in or beyond the sphincter are tied. The superior result of this more ideal technique is that the patients are more generally able to withhold liquid feces and gas from

the beginning, which was not the rule with the former methods.

The essential difference between my operation for restoration of the female pelvic floor and the Emmet perineorrhaphy, which is the best of the older operations, consists in this: that in the former the two opposing lateral portions of deep pelvic fascia and levator ani are brought into direct contact with each other near the median line in front of the rectum and beneath the vagina, while in the latter operation they are approximated but do not come into actual contact with each other. They become reunited to the intervening portion of the vagina. This intervening portion of vagina is in part denuded of vaginal mucous membrane, and in part it embraces this also, chiefly as the result of the Emmet "crown stitch." This is illustrated by the method of passing the stitches, as shown in Fig. 9, which is taken from Emmet's own book. If in that denudation the effect of my operation was to be secured, then an additional layer or tier of buried sutures would have to be placed beneath those there represented. Such buried sutures would have to be entered within the denuded lateral sulcus of one side, taking a massive grasp of its lateral wall and including its extreme bottom. They would have to include the areas of the two lateral sulci, approximately as indicated in the white effaced line on the left side of Fig. 9. Each must then engage the corresponding structures of the opposite side, and bring these opposing bearing structures of chief importance directly together near the median line without permitting any part of the vaginal wall to remain or to become engaged between them. In this manner a firm bridge would have to be constructed out of these only really serviceable parts, without the assistance of an intervening or assisting patch from the vagina to complete the arch, and then the sutures represented in the figure might be tied, all of which are entered upon outside skin, and none of them engage the deeper part of the lateral walls and bottoms of the sulci.

Conclusions.—1. The superficial muscles of the perineum, that are readily accessible from its skin side, are too delicate and not located right to furnish any such support as is demanded of the female pelvic floor. And since skin and connective tissue compose the greater part of the triangular mass of tissue which fills in the space between the rectal and vaginal outlets, and serves merely as a common fixation point for

the various superficial muscles, no dependence for anything more than cosmetic considerations should be placed upon plastic operations that deal solely or chiefly with this so-called perineal body.

2. The levator ani muscle, and the two layers of the deep pelvic fascia between which it is placed and by which it is reinforced, are the potential elements in the true pelvic floor of the female. And as these structures lie within the pelvic cavity usually, nowhere nearer than 2.5 centimetres to the outside skin, it is evident that any actual or anatomically correct repairing of them must be done upon their inner surface, from within the pelvic lumen and beneath the vaginal posterior and lateral walls.

3. The associated fasciæ of the levator ani muscle, especially the recto-vesical fascia on the inner side, are the chief *constant* support of the internal organs and intra-abdominal pressure. Their action is intensified or assisted by contractions of the muscle periodically as requirements for it arise. Therefore mere resection of the muscle on one or both sides (M. L. Harris) in its longitudinal course, without also shortening the fascia and without uniting the two lateral portions of either or both of these structures in the median line in front of the rectum, will, in all probability, be unable to subdue a well-developed rectocele completely or permanently, and also be incompetent to restore a sufficiently strong retentive pelvic diaphragm against forces from above.

4. These important objects have, however, been abundantly demonstrated to result quite uniformly from a median approximation and *direct union* of the lateral halves of the levator ani and its fasciæ in front of the rectum and back of the posterior vaginal wall, temporarily detached and held out of the way.

5. In complete lacerations into the rectum, the rent in the bowel is first denuded by turning down a flap from its edge, and it is then sutured, the ends of the sphincter ani being dissected out and united, and its coaptation sutures are relieved of tension by a deeper tension suture. After this the vaginal portion of the operation follows in the usual manner.

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THE ALUM ENEMA IN THE AFTER-TREATMENT OF ABDOMINAL OPERATIONS.¹

BY

VIRGIL O. HARDON, M.D.,
Atlanta, Ga.

THE improvements introduced into the technique of abdominal work during the last few years have largely eliminated the dangers which formerly characterized that department of surgery. Rigid antisepsis and thorough toilet of the peritoneum have materially diminished the mortality from septicemia, complete operation and new methods of hemostasis have reduced the danger of hemorrhage, while rapid operating and saline infusions have made fatal shock almost a thing of the past.

But there is one complication in abdominal surgery which has not kept pace with the general improvement and which claims nearly as large a percentage of victims to-day as it did ten or fifteen years ago. I refer to intestinal paresis. Every one who has done any considerable amount of abdominal work is familiar with this much-dreaded complication and knows how great a fatality characterizes it. It follows the simplest as well as the gravest operations, and when once it has become established the prognosis, under accepted methods of treatment, is in the highest degree unfavorable.

The best authorities are agreed that intestinal paresis following abdominal section is due to exudative peritonitis. It

¹ Read at the annual meeting of the Medical Association of Georgia April 17, 1901.

is not easy to believe that such is the case, in view of the fact, upon which all operators are also agreed, that free movement of the bowels causes the symptoms to disappear in a few hours, and that when this is accomplished the patient goes on to a rapid recovery. Yet the reports of autopsies made after death from this cause compel an acceptance of that view.

Dudley has given a graphic description of the clinical history of such cases. He says: "Every abdominal surgeon is painfully familiar with the characteristic symptoms. He has descried them from afar as one may discern the black cloud near the horizon. In the balance between hope and fear he has watched the anxious face, the drawn expression, the progressively rising temperature; the nausea, at first attributed to the anesthesia, then, as this subsides, the vomiting of sepsis which takes its place; the frequent regurgitation of bile mixed with blood and mucus and growing darker and darker. He has recognized the gradual failure of the pulse, first weak, then running, then thready to the vanishing point; the parietic and distended bowels, which refuse to act; the rapid respirations, the cold extremities, the staring eyes, the wide nostrils, and finally the inevitable collapse." "Treatment," he adds, "is utterly useless. . . . The first effort should be directed to the movement of the bowels." With reference to the same condition Penrose says: "If these symptoms are not arrested by the use of purgatives, turpentine enemata, and the rectal tube, it is probable that the result will be fatal." Similar quotations could be given from many other writers on the subject, and the lurid picture thus drawn confirms the experience of every operator that the condition is one of the greatest gravity and one which calls for prompt and energetic treatment. All remedial measures which do not include thorough movement of the bowels are absolutely futile, and if this end be accomplished no other remedy is needed. The re-establishment of intestinal peristalsis is, therefore, the essence of treatment. It is not necessary that there should be a copious discharge of fecal matter. If peristaltic action be induced to the extent of causing expulsion of the gas by which the bowels are distended, the desired result will be accomplished and fecal discharges will follow later. This fact renders it highly probable that distension of the bowel by gas is a cause as well as an effect of the paralysis of muscular action in the intestinal walls.

Epsom salt has been found to be the best internal remedy

for exciting peristalsis under these circumstances. But, unfortunately, in the great majority of instances vomiting is so prominent a symptom that this remedy is not available. The stomach rejects it as soon as it is taken. It is also true that the vomiting is most persistent and uncontrollable in just those cases in which catharsis is most urgently called for. What is true of salts in this respect is equally true of all other internal medication, so that the stomach cannot be utilized as an avenue through which to attack the disease. Catharsis by hypodermatic medication has been often attempted, but has always proved a failure. The rectum alone remains as a channel through which remedies can be introduced into the system. The ordinary enemata of soap and water, oxgall, turpentine, and other substances are sometimes effectual at the beginning of the abdominal distension. But after the symptoms have become well pronounced, these remedies usually fail to have any effect and are frequently retained, thus adding to the distension already present. The rectal tube carried above the sigmoid flexure, even to the ascending colon, will sometimes allow of the passage of a portion of the gas. But the absence of contractile power in the muscular walls of the bowels, and the presence of gas in the small as well as in the large intestine, often render this procedure useless. Attempts to draw off the gas by aspiration through the abdominal walls have proved futile, and at the present day are mentioned only to be condemned. When all these measures fail, as they will fail in a large percentage of cases, the patient goes from bad to worse, and death soon closes the mournful scene. These facts, which are patent to all abdominal surgeons, furnish my reason for offering to the profession for such cases a plan of treatment which has proved so satisfactory in my hands that it has entirely superseded all others. I refer to the alum enema.

Almost exactly nine years ago, on April 21, 1892, I operated on a patient for pyosalpinx, removing the appendages on both sides. The operation presented no unusual complications. There followed the ordinary ether nausea, but instead of subsiding in a few hours, as it commonly does, it continued through the next day. At the end of twenty-four hours there was evident distension of the bowels by gas. The temperature, which up to that time had remained below 100°, rose to 102°. The pulse ran up to 130 and began to be thready in character. I recognized the necessity for prompt action and prescribed Epsom salt, which was not retained. Calomel in

half-grain doses every hour was also rejected by the stomach. Enemata of soap and water, castor oil, glycerin, turpentine, and oxgall were successively used, but without avail. A rectal tube was passed high up into the colon, but no gas escaped through it. At the end of the second twenty-four hours the patient's condition was alarming, and, from my previous experience with intestinal paresis, I felt that the case was practically hopeless. In casting about in my mind for some means of relief, it occurred to me that, by analogy with the violent gastric peristalsis effected by alum when taken into the stomach, a similar effect might follow its injection into the bowel. I therefore directed the nurse to prepare a solution of an ounce of powdered alum in a quart of warm water and to inject it into the rectum, while I sat by and awaited the result. In about ten minutes I was rewarded by hearing the sound, so grateful to the ears of the abdominal surgeon, of flatus escaping from the rectum. A large volume of gas was expelled, and the patient was correspondingly relieved. In an hour the enema was repeated with a similar result. From that time on the gas was expelled at intervals spontaneously, the pulse increased in strength and diminished in frequency, the temperature fell rapidly until it was below 100°. The patient was practically convalescent on the following day, made a rapid recovery, and left her bed at the end of two weeks.

Since that time I have used the alum enema in hundreds of cases, and always with equally good results. I have not varied from the formula which I used in the first instance; but one of my assistants, on one occasion, misunderstanding my directions, used an enema of one-half that strength with apparently as good results. But as no bad effects follow the use of the stronger solution, I still use an ounce of powdered alum to a quart of warm water, which is approximately a three per cent solution. It usually causes expulsion of gas in from five to fifteen minutes, but in some cases a longer time is required. Sometimes it is necessary to repeat the injection before it will act. This can be done with perfect safety an indefinite number of times. There may be a reaccumulation of gas after the first enema has done its work. If so, the injection may be repeated as often as the gas accumulates. There is sometimes some pain attending its use, but it is not severe. It is not necessary that the solution should be carried high up in the colon. I inject it in the same manner that I would an ordinary enema, and probably in no instance does it

go above the sigmoid flexure. But peristalsis is induced throughout the whole intestinal tract, including the small as well as the large intestine. In a certain proportion of cases in which the alum enema has been repeated several times, there is thrown off from the bowel a tubular cast. The first time that this occurred I was much alarmed, as I feared that it was due to sloughing of the mucous coat of the intestine. But a microscopic examination made by Dr. H. C. Moncrief, house surgeon of St. Joseph's Infirmary, showed that the cast was composed simply of mucus whose albuminous elements had been coagulated by the alum. I have therefore come to regard this phenomenon as of no importance.

As to the manner in which the alum enema acts in producing movement of the bowels, I have no theory to offer. That it does not act mechanically by its bulk is shown by the fact that in cases in which a similar quantity of water or of any other fluid has been injected without any result the alum solution is effectual. It seems to have as specific an action in inducing intestinal peristalsis as has castor oil when taken into the stomach. In only a small proportion of cases is the peristalsis sufficiently violent to produce griping pains. It does not cause a serous exudation from the intestinal walls, as does Epsom salt, and therefore produces less depletion of the abdominal blood vessels. For that reason I prefer to use Epsom salt when the stomach will retain it.

The advantage which I claim for the alum enema consists in the promptness and certainty of its action in a class of cases in which all other remedies frequently fail and in which such failure involves the death of the patient. It is, therefore, a life-saving measure, and as such I feel it my duty to offer it to the profession.

It has fallen to my lot to do abdominal work for the last sixteen years. During the first seven years, in which I did not use the alum enema, 42 per cent of my deaths were due to, or at least accompanied by, intestinal paresis. During the last nine years, in which I have used the alum enema, I have not had a single death from that cause. I have seen only one patient in whom the alum enema failed to move the bowels promptly. In that case the enema was used every two hours during the third day without any apparent effect, and it was therefore discontinued. But the bowels acted spontaneously on the fourth day and the patient recovered. This may have been a case where the action of the alum was delayed for a

longer period than usual. During the nine years in which I have used the alum enema my percentage of mortality in abdominal work has been a little less than one-half of what it was during the previous seven years. A portion of this decrease is doubtless due to improved methods of operating which have been introduced during that time. Another portion is doubtless due to the greater skill which comes to every man as his experience increases. But there still remains a wide margin which, in my judgment, may be reasonably attributed to the effect of the alum enema in eliminating intestinal paresis as a cause of death.

The use of the alum enema has not been confined to my own practice. Other surgeons who have seen its beneficial effects in my hands have adopted it with equally good results. It is now in common use in the Grady Hospital, St. Joseph's Infirmary, and other institutions in Atlanta. Nor is its usefulness limited to abdominal surgery. I often employ it after minor operations in patients who cannot retain a cathartic taken into the stomach, or when cathartics, though retained, fail to act. A number of the general practitioners of my own city have informed me that they have also used it in non-surgical cases, especially typhoid fever, with great satisfaction. It has, therefore, a wide range of usefulness, and it appears to me to constitute a valuable addition to the therapeutic resources of the profession.

288 PEACHTREE STREET.

REPORT OF A CESAREAN SECTION IN A CASE OF OBLIQUELY CONTRACTED PELVIS.¹

BY

W. REYNOLDS WILSON, M.D.,
Philadelphia, Pa.

(With illustration.)

THE record of this case, presenting, as it does, an instance of unusual deformity among the more characteristic malformations of the pelvis, is as follows:

Mrs. S., age 39, a native of Austria, presented herself for

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, March 21, 1901.

examination on the 22d of January, 1900. Her pelvic measurements were as follows: The distance between the spines, 28 centimetres; between the crests, 28 centimetres; external conjugate, 20 centimetres; right external oblique, 23 centimetres; left external oblique, 21 centimetres. The circumference of the pelvis was 102 centimetres. The abdomen was pendulous and its circumference measured 108 centimetres. The transverse diameter at the outlet was 9 centimetres.

The history of the previous labors reveals a condition of progressive deformity, as far as can be gathered from the statement of the patient, and excluding the possibility of a lessened development in the first child, which was the only one successfully delivered. The patient's first delivery occurred in her native land some fifteen years ago, the labor being, according to her statement, normal. The birth of the second child was marked by a complex presentation, the delivery being completed by decapitation and extraction. In her third delivery the breech presented, the child being also delivered by decapitation of the after-coming head. Her fourth child was delivered by forceps, but did not survive.

In August, 1897, the patient entered the Pennsylvania Hospital suffering from a deep-seated abscess in the left lumbar region. This was evacuated under ether, and an examination of the cavity showed several pockets situated deeply in the posterior abdominal wall. The cavity was irrigated and drained. In October following, the patient was again etherized and the twelfth rib on the left side was found necrotic. The rib was removed, and at that time an examination of the anterior aspect of the vertebral column in the vicinity of the abscess was made by way of the resulting cavity. No vertebral caries was detected. The wound continued to discharge until the end of the following March, when the patient left the hospital. At the time of her recent delivery, about to be described, the patient presented no lateral tilting of the pelvis, no scoliosis, and no impairment of gait. The examination of the patient's urine, made some time after delivery, revealed the absence of tubercle bacilli.

Labor began on January 26. Partial dilatation of the os took place promptly, although obliteration of the cervix was slow. The membranes were intact. The vertex presented, and the fetal heart was discovered in the left iliac region. As labor progressed the head refused to engage and remained freely movable above the inlet. At 10:25 A.M. on the follow-

ing day the membranes ruptured spontaneously. The amniotic fluid was not discolored. Cesarean section was selected as the best means of delivery, and the time for action was governed by the condition of the mother's pulse and the fetal heart.

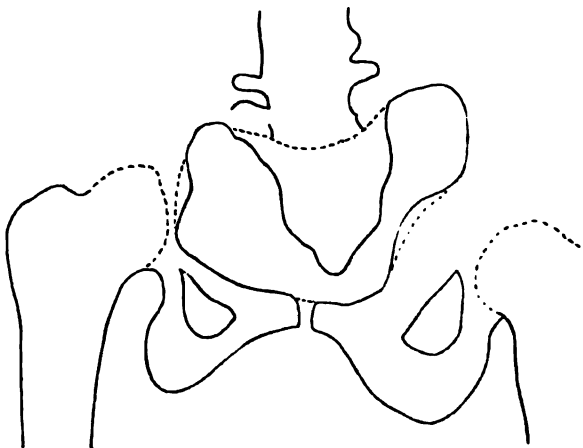
A classical Cesarean section was performed. The uterine incision was stitched with fine silk and the abdominal wall with silkworm gut. A living child was extracted weighing nine and a half pounds. The puerperium was interrupted by the occurrence of a pelvic exudate which distended the cul-de-sac, giving rise to mild systemic infection and accompanied by the presence of streptococci, found within the vagina. The infiltration was absorbed spontaneously, and the patient was discharged in good condition six weeks after operation.

The character of the labor, the abnormality of the pelvis, and the skiagraphic tracing of the deformity show that the dystocia was such as to be relieved only by Cesarean section. The previous history of the case relative to the lumbar abscess at first directed our attention to the possibility of a secondary tuberculous inflammation of the iliac synchondrosis. The history of progressive deformity leading to more and more difficult deliveries also pointed in this direction. To exclude tuberculous disease, the study of the case was directed toward investigation of the following points: (1) the absence of scoliosis from spinal caries; (2) the absence of hip-joint disease and lameness; (3) the negative history of spinal caries, the origin of the abscess being due to a necrotic rib; (4) the negative results in the examination of the urine as to the absence of tubercle bacilli, this point naturally bearing upon the possibility of tuberculous abscess originating in the kidney.

It was therefore probable that the deformity was not due to tuberculous inflammation. It remains, therefore, to differentiate, in the consideration of the deformity, between (1) an early inflammatory condition progressive in character, (2) a condition of rickets, (3) a condition of osteomalacia with restoration of the bony structure. As to the last-named condition, it seemed proper to exclude its presence in this case, principally from the fact that we were dealing with an obliquely deformed pelvis, an unusual deformity resulting from osteomalacia, as well as from the fact that the separation of the ilia in the present case is greater than would be found in this disease. Before considering the first two possible causes, however, it is proper to note that not only an oblique deformity of the pelvis was present, but that the lateral capa-

city of the pelvic cavity and inlet was also reduced, as shown by the skiagraphic tracing. This fact has an important bearing on the diagnostic aspect of the case, which will be referred to later.

As to the question of early inflammation independent of rickets, it is possible to have, according to Olshausen, a primary inflammation resulting in synostosis with shrinkage of the wing of the sacrum and distortion of the pelvic inlet from pressure. In such cases osteophytes are to be found in the region of the inflammation, together with thickening of the bony structure. The atrophy of the sacral wing is a secondary condition and arises from the interference of nutrition by



Skiagraphic tracing of deformity (reduced to one-ninth original size).

inflammatory closure of the nutritional foramina. In the case under discussion no such thickening was detected.

As to the presence of rickets, to establish this as an etiological factor it would appear necessary at first sight for us to find in the case a greater degree of dystocia in the patient's first delivery, if her history be correct. It seems, however, fair to take into consideration this fact—namely, that a condition of rachitis in early life may have existed in a moderate degree and may have acted as a predisposing cause of a later inflammation which increased the deformity.

As to the reduction in the general diameters of the inlet, irrespective of the oblique deformity of the pelvis, the probability of rickets is established by this fact. The asymmetry of the pelvis is not opposed to such a view, as the rachitic

pelvis may become distorted through pressure even in the absence of inflammation. The presence of rickets, therefore, would mean that original deformity had existed affecting the iliac synchondrosis, and followed either by the unlikely presence of tuberculous inflammation or by secondary displacement from pressure. In either case the progressive nature of the deformity would be explained. The probabilities, however, in the present case would point to the latter hypothesis, as the configuration of the pelvic joint affected revealed by examination no evidence of irregularity or hyperplastic bony deposit.

Still another hypothesis must be considered—namely, the congenital absence of the centre of ossification in the wing of the sacrum. In such case the affected side of the sacrum is necessarily arrested in its development and the pelvis assumes an obliquely distorted shape. Synostosis in such instances is not an absolutely necessary result, but it occurs frequently, inasmuch as the cartilage is either poorly developed or through pressure is absorbed, so that the bones, as a result of their intimate contact, become united.

In considering the diagnosis in general of oblique deformity, it is not uncommon for the presence of obliquity to be overlooked prior to labor. In this connection the external measurements of the present case are significant. The progress of labor is apt to be interfered with at an early stage, and the arrest of the head in lateral deflection above the inlet is observed. In measuring the pelvis the irregularity of the measurements between the posterior spines of the ilium and the spinous process of the last lumbar vertebra is to be noted. By internal examination a difference is observed in the distance between the ischial spines and the corresponding edge of the sacrum. There exists also an asymmetry of the entrance to the true pelvis, due to the distorted outline of the inlet. The promontory of the sacrum is not directly opposite the symphysis, but faces the innominate eminence of the affected side.

As to the recognition of the deformity in the case under discussion, previous to delivery the position of the head showed characteristic non-engagement, with lateral deflection and extramedian position of the vertex. The tendency to engagement was with the occiput toward the left, showing the inability for the head to enter the inlet, inasmuch as its sagittal suture was coincident with the shorter oblique

diameter; for it is characteristic of this deformity that the oblique diameter, measured from the point of synostosis to the opposite innominate eminence, is greater than the oblique diameter measured from the unaffected side. Internal examination of the pelvis showed that both the left tuberosity and ischial spine were nearer the median line, the inward displacement of the lateral wall of the true pelvis corresponding to the acetabulum on the affected side—namely, the left. The transverse diameter of the pelvic cavity at a point on a level with the acetabula measured but three inches, whereas the skiagraphic tracing shows a transverse diameter of four and one-half inches at the inlet. All these points bear directly upon the diagnosis of an obliquely contracted pelvis.

In conclusion, the classification of this pelvis, according to its morphology, should scarcely be that of a Naegele deformity, as the synostosis and shrinkage of the sacral wing found in the latter are not represented in this instance. The moderate degree of contraction, however, together with the outward flanging of the crests of the ilia as represented by the external measurements (the interspinous and intercrystal diameters being equal), point to an original rachitic deformity preceding the oblique distortion.

CLINICAL MEMORANDA:

- I. PARTIAL HYSTERECTOMY FOR PUERPERAL SEPSIS.
- II. OVARIECTOMY COMPLICATED BY ANEURISM OF THE AORTA.
- III. THE REPAIR OF LACERATED CERVICES AFTER LABOR.¹

BY

B. C. HIRST, M.D.,
Philadelphia, Pa.

THE following is simply a series of brief clinical notes of interesting cases:

1. *Partial Hysterectomy for Cases of Necrosis of the Uterus due to Streptococcic Infection.*—For some years past I have encountered cases of infection of the uterus in which the uterine body has been softened to the consistence of cheese, so that no ligature will hold in it, and it is possible to pinch it through with the thumb and forefinger.

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, March 21, 1901.

On bacteriological and microscopical examination the uterine substance has been found swarming with streptococci, and there has been extensive necrosis of the tissue. It is obvious that no patient can live with this condition of an organ in the abdomen, and the only hope for her lies in its removal. I was for some years in the habit of doing complete hysterectomy for these cases, with a success that I think must be called gratifying when we consider the nature of the case and the condition of the patient who is subjected to a serious major operation. I have had three such cases in the last two months. In one the necrosis of the uterus was so extensive that it was necessary to take the whole organ out. The patient was desperately ill, and had been so for four weeks since her confinement. She had, in addition to the necrosis of the uterus, a large, foul-smelling abscess in Douglas' pouch and also infiltration and infection of the mesocolon of the whole sigmoid flexure, which was thickened to more than an inch and had multiple abscesses scattered through it. I anticipated the woman's death. Postmortem examination showed the stump healthy, the pelvis in a satisfactory condition, but the whole mesocolon had broken down into abscesses and all the blood vessels in it were infected. The case was hopeless from the first.

Two other cases within this same time recovered, and I think the form of operation had something to do with the recovery. In both there was necrosis of the fundus uteri and of one cornu which corresponded with the infected tube and broad ligament. It was possible to get rid of all infected tissue by excising the tube, ovary, broad ligament, the cornu of the uterus, and the whole fundus by a wedge-shaped excision. The operation was not difficult. It was done more quickly than the hysterectomy could be done, and I think with less shock.

One of the cases, in addition to the necrosis of the uterus and infection of the tube, had a perforation of the bowel about the size of a quarter of a dollar. The lesion in the bowel was repaired, but, as so often happens when surgery is done on the intestines in a bad condition—that is, when the walls have partially sloughed—the stitches did not hold. The intestinal wound gaped open, and the woman had a fecal fistula, but is now recovering and will eventually get well. Her condition is excellent some three weeks after the operation. Gauze and tube drainage was of course employed.

These two cases are the first in which I have done this partial hysterectomy for puerperal sepsis. I think other cases will give me an opportunity to repeat the operation, and I offer as a suggestion the partial hysterectomy of these necrotic uteri, instead of a complete hysterectomy, as a quicker, easier, and less shocking operation in the surgical sense, and one, therefore, that ought to give us a larger proportion of recoveries in the kind of women upon whom we must operate.

2. *Removal of a Large Ovarian Cyst from a Woman with Aneurism of the Arch of the Aorta.*—I operated recently upon a woman with a large aneurism of the arch of the aorta bulging out the chest wall to a considerable extent. The woman was advanced in years, over 50 years of age. Her physician viewed the operation with great anxiety, and before the patient took ether he assured her that she had not three chances in a hundred of coming out of the ether alive. She demanded the operation, and I was willing, as it offered her the only chance for life. She had had the ovarian tumor for five or six years; the aneurism, I think, for sixteen.

She had seen a number of gynecologists, who had refused operation. A diagnosis of fibroid tumor had been made in her case, and the operation was declined on this ground. The operation proved the condition to be simply a multilocular ovarian cyst of considerable size. The patient made an uncomplicated recovery. One feature of interest was the fact that the multilocular ovarian cyst was intraligamentary and had no pedicle. It had to be shelled out. A large raw space was left in the pelvis, which I covered over by a peritoneal flap obtained by the enucleation of the tumor. Drainage was effected by a puncture in the vaginal vault. A strip of gauze was placed in the tumor cavity and led out through the vagina. A flap of peritoneum was sewed over the gauze, so as to exclude the infection of the peritoneal cavity and to make the drainage extraperitoneal. There were many ounces of sanguinolent fluid discharged from the drainage tract in the ten days following the operation, and the patient made a perfectly afebrile convalescence.

3. *The Repair of Lacerated Cervices directly after Labor.*—Lusk advocated primary repair of lacerated cervices. I did not feel, when I first read this statement, that it was good advice, but in order to test it I conducted a series of operations upon lacerated cervices at various stages after labor, and I

have now come to a definite conclusion which I cannot help feeling is correct. The primary operation directly after labor is not satisfactory. This result might be expected in view of the conditions. The cervix immediately after labor is enormously enlarged. It is edematous, tremendously stretched, and stitches put in it at that time hang like earrings three days later. One cannot expect good union of denuded surfaces under these circumstances, and it is not surprising to find a considerable proportion of primary repairs of the cervix turning out unsatisfactorily. One side perhaps unites and the other does not. It is possible often to get a perfect result, but success is not uniform, and therefore I do not think the operation worth while at this time. After two weeks there is the same certainty of success that there is in secondary operations.

Aside from the advantage of waiting if an operation is necessary, one finds, by the observation of a considerable number of these injured cervixes, most excellent spontaneous repairs occasionally, even in the most extensive injuries. I have had made a series of colored drawings at different stages after labor. The first one is taken from a woman directly after a difficult forceps operation. The cervix was enormous. It could be drawn a considerable distance out of the vulva. It was edematous, bruised, hypertrophied. It was easily sewn up, but the operation did not succeed. A few days after the operation the stitches hung like earrings in the tissues.

The next drawing shows a laceration of the cervix four days after labor. Even at that time involution had so well advanced that if the operation were done then success would be almost certain. The only disadvantage about an operation at this time is the quantity of lochial discharge.

The next drawing shows the appearance of the cervix one week after labor. Involution is well enough advanced, but there is a slight septic exudate which deterred me from operating. If infection occurs upon the cervix an operation is naturally likely to be a failure. The operation should be postponed for another week.

The next drawing represents a cervix badly torn. Repair was made at the end of two weeks with a perfect result. I simply had to scrape the raw surfaces, insert the sutures, and perfect restoration was secured. The appearance now is that of a normal cervix. At the end of four weeks the patient was perfectly cured of her cervical tear and had entirely recovered from childbirth.

The final picture represents a cervix three months after labor, showing perfect cure by natural repair of what was originally an extremely bad laceration. No operation was performed, and, as time has shown, no operation was necessary.

In my judgment these operations on the cervix ought not to be performed immediately after labor. Operation should be postponed for at least four days; better, on account of the lochial discharge, for nine days or two weeks. Then, if the laceration is bad, it should be repaired. The woman then recovers from the repair of injury and the childbirth at the same time.

The laceration of the cervix is accompanied occasionally by coincident laceration of the perineum, in which case we might hesitate as to the best course. I have usually let the perineum go, when I have decided to operate upon the cervix, for two weeks, and have operated upon both together. In a private case, where the element of time is not so important, I might not operate for four weeks. I think very often it is an advantage not to sew up the perineum immediately, and that better work is done and more secure and permanent repair is obtained by delaying the operation. If, therefore, I should have to put off a perineal operation for two weeks in order to do a cervical repair at the same time, I should feel that the woman had suffered no disadvantage from the delay. On the contrary, the perineum would be repaired by a formal, careful operation on the operating table under ether, and the work would probably be rather better done than it usually is directly after labor.

THE TECHNIQUE OF NEPHRO-URETERECTOMY.

BY

J. F. BALDWIN, A.M., M.D.,

Surgeon to Grant Hospital; Fellow of the American Association of Obstetricians and Gynecologists, etc., Columbus, O.

IN THE AMERICAN JOURNAL OF OBSTETRICS for April, 1900, Noble, of Atlanta, Ga., in reporting a case of nephro-ureterectomy, states that his case made the fifth in which the operation had been performed, the previous cases being one each by McKosh and Morris and two by Kelly. In the same number of this JOURNAL Pryor, of New York, reports a case, and in

a personal communication Bovée, of Washington, states that two other operations have been made, making a total of eight. Having personally made three operations for the complete removal of the kidney and its ureter, I feel that the technique which was used in the last two cases and to a certain extent in the first, and which I found very satisfactory, may not be without interest to the profession.

The histories of the patients are entirely unimportant. In two of the cases the disease was tubercular, with involvement of the entire ureter, and in the third there was present an enormous hydronephrosis with great distension of the entire length of the ureter. The first operation was performed September 28, 1896, on a patient referred to me by Dr. J. P. H. Stedem, of Newark; the second, October 19, 1898, on a patient of Dr. S. O. Giffin, of Columbus; and the third, January 31, 1901, on a patient referred to me by Dr. E. W. Doherty, of Upper Sandusky, the attending physician with others being present at each operation.

In the first case, in addition to a large tubercular kidney, there was cystic disease of both ovaries and a greatly thickened ureter. This could be made out previous to the operation. The abdomen was therefore opened in the median line and the appendages removed in the usual way. Examination of the kidney showed large pus cavities having thin walls, and, fearing that rupture might take place from the manipulation, the patient was turned on her side and the kidney removed after the usual manner through the loin. It was removed without rupture, and this incision closed with temporary drainage. The peritoneum over the ureter and just outside the colon was then incised and the ureter freed from surrounding connective tissue with the finger, the opening through the peritoneum having been made only long enough to enable two fingers to be easily introduced. This separation of the ureter was carried well down into the pelvis, tunnelling under the colon so as not to disturb in any way its connections. A second peritoneal opening, about an inch and a half in length, was now made in the floor of the pelvis over the ureter and the tissues separated in each direction until the ureter was traced to its entrance at the base of the bladder. With a pair of long forceps the open end of the ureter was caught, after surrounding it with a wisp of gauze, and the tube itself drawn into the pelvis. The forceps was removed as soon as the end of the ureter appeared at the pelvic opening, the instru-

ment having been used merely to prevent any contamination of the tissues from escape of the contents of the ureter. An opening was now made in the vault of the vagina, so as to reach the ureter at its entrance into the bladder. The ureter was then severed about two inches from the bladder, and the remaining portion, after pressing out its cheesy contents, drawn through into the vagina and a clamp applied to the ureter close to the bladder. The small opening in the floor of the pelvis was then brought together with fine catgut and the abdomen closed without drainage. The vaginal forceps was removed in forty-eight hours.

The operation would have been simplified and shortened had the removal of the kidney been made through the abdominal incision, as was done in the next two cases.

In the second and third cases, after a median opening of the abdomen the kidney was brought out through an incision through the outer layer of the mesocolon. The ureter was then traced down with the fingers, the patient being in the Trendelenburg position, and the other steps of the operation made just as in the first case. In these cases the opening in the pelvic peritoneum was closed with fine catgut. The opening in the mesocolon did not need uniting, since its edges naturally fell together.

Convalescence, so far as the operation itself was concerned, was in all the cases entirely satisfactory, there being almost no shock, no peritonitis, and no sepsis; but ultimate recovery followed in only one case, death resulting in the others from uremia owing to involvement of the remaining kidney.

The advantages of this technique are that the operation is made with comparative ease, that from beginning to end all the work is practically entirely under the eye and touch, and that traumatism is reduced to a minimum. Pryor's method of inverting the ureter into the bladder and retaining it there, until it sloughs off in the course of three weeks, by a probe attached to the ureter and brought out through the urethra, where it is retained, does not commend itself to me, since it is more complicated and adds materially to the risk of a later cystitis. The clamping of the ureter close to the bladder wall causes the remaining portion to slough off and thus is secured riddance of the entire diseased canal. The operation is comparatively easy, is clean, and requires a minimum of time for its accomplishment.

• REMARKABLE CONDITION OF THE KIDNEYS IN A WOMAN
DEAD FROM ECLAMPSIA PARTURIENTUM.

BY

HENRY J. KREUTZMANN, M.D.,
San Francisco, Cal.

(With illustration.)

IN the following report the history of a case is given with the pathological status. No effort is made to throw any light upon the yet very obscure etiology of the convulsions to which gravid, parturient, and puerperal women are sometimes subjected; neither is it intended to draw any conclusions from this observation, as far as the treatment of these eclamptic seizures is concerned. The only object of this publication is to put on record a case where the pathological condition of the kidneys appeared remarkable, if not unique.¹

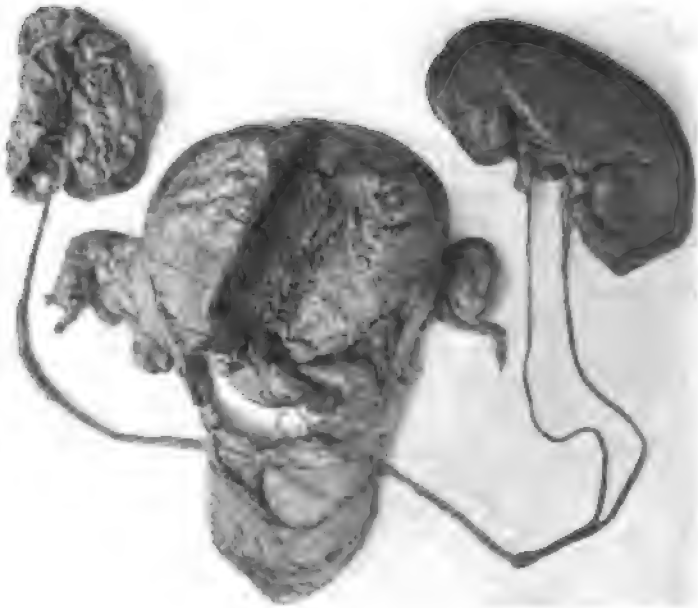
Mrs. H., a patient of Dr. William Friedhoffer, æt. 31 years, married, of German parentage, Ipara; last menstruation December 23, 1899. The patient enjoyed the best of health until July 16, 1900, when she noticed her feet very much swollen and edema of the eyelids in the morning; feeling of general malaise and headache. Consulted Dr. Friedhoffer on Friday, July 20, 1900. On examination he found the lower extremities, hands, face, and eyelids very much swollen; color of skin a yellowish tint; heart and lungs normal. Examination of urine—on boiling became solid, odor strong, color olive green. Was called at 7 A.M. July 22, and found patient in great agony. She had suffered violent pains since 2 A.M. in the epigastric region, accompanied with vomiting. Pupils were contracted to the size of a pinhead. On inquiring about the elimination of urine, the patient informed the doctor that she passed one pint of dark-colored urine during the night and bowels moved freely, which was due to the effects of the medicines prescribed July 20. At 10 A.M. the patient was seized with convulsions, and had eight until 6 P.M. After the first convulsion she lost consciousness, which was never re-

¹ Since I wrote this I have found the report of an almost identical case by R. Olshausen in No. 39 of Sammlung klin. Vorträge, p. 383.

gained. After the first convulsion the patient received a hypodermatic injection of pilocarpine, a large injection of normal salt solution, and chloral hydrate per rectum.

The patient was seen by me at 9 P.M. when brought into the German Hospital; she was in profound coma; pupils contracted to the size of a pinhead; absolutely no reaction; skin moist; pulse 140, fairly strong; temperature 104°; breathing stertorous, with great difficulty; foam between the lips.

Uterus reaches above umbilicus; contractions are noticed; no heart beats perceptible. The cervix is flattened; os perme-



able for the tip of the index finger; head presenting, pressing upon the entrance to the pelvis.

Bladder catheterized; 1½ ounces of dark olive-green urine withdrawn. Venesection on the right vena mediana: vein very small; transverse incision; blood escapes with a spout; 300 cubic centimetres withdrawn; 800 cubic centimetres of normal salt solution infused into the vein; then blunt dilatation of the cervix until two fingers can be introduced. An effort to turn with combined method fails, since head presses too much upon the pelvis. Rupture of the water bag; then on both sides of the cervix two pairs of clamps applied and

deep incisions made; craniotomy and slow delivery of the head; easy delivery of the body. Afterbirth removed soon afterward without difficulty. The deep incisions carefully closed with a number of silk sutures. Patient put to bed in about the same condition as before delivery.

Patient remained in the same condition all night; amount of urine secreted, only a few ounces. She never became conscious; the pupils were as much contracted as before.

During the next day the patient moved the left arm off and on, and swallowed some tea and water; temperature fell to 101°; pulse remained the same. Amount of urine secreted during the day, only a few ounces. Patient died at about 10 A.M. of the following day. A partial autopsy was permitted, and Dr. Lois Nelson kindly sent me the following "Pathological Report of Specimen from Mrs. H.":

"Specimen consists of both kidneys, with ureters, bladder, uterus, and both adnexa. Right kidney measures 9½ by 4½ by 3 centimetres; surface of kidney lobulated, capsule adherent; on section, kidney light colored, no cortex or medulla preserved, whole kidney being changed into a collection of cysts separated by firm fibrous tissue; cysts have a smooth surface, some filled with a putty-like substance, others with colloid material. Right ureter 29 centimetres long, normal diameter, and patent. Left kidney, surface smooth; capsule peeled off easily; on section, kidney pale, cortex 7 millimetres thick and yellowish; striæ not well marked. Left ureter 35 centimetres long, normal diameter, patent, and double in the upper 30 centimetres of its length; its upper division passes out above and its lower division below the renal vessels. Bladder measures 10½ by 9 centimetres; wall 7 millimetres thick; inner surface smooth; ureters enter normally. Uterus 13 by 11 by 7 centimetres; wall 3 centimetres thick; placental site just above internal os and to the left; several silk sutures in cervix. Both adnexa normal.

"Microscopical examination of right cystic kidney shows chiefly a mass of connective tissue and areas of small round cells; only a few Malpighian bodies, and these in different stages of interstitial changes. In all these Bowman's capsule is much thickened, and the capillaries are more or less replaced by connective tissue, in some no capillaries remaining. Some hyaline and fatty degeneration of connective tissue. The remains of a few tubules with atrophic or degenerated epithelium are seen. The cyst walls show only connective tissue, being destitute of epithelium.

“Diagnosis: Cystic kidney with chronic interstitial nephritis.

“Microscopical examination of left kidney shows cloudy swelling of epithelium of the glomeruli, with epithelium of Bowman’s capsule in general normal. Epithelium of convoluted tubules shows a high degree of cloudy swelling and some necrosis. The smaller tubules show a slight degree of cloudy swelling and contain many hyaline and a few granular casts. The interstitial tissue is not increased and contains a few small round cells.

“Diagnosis: Acute parenchymatous nephritis.”

1018 SUTTER STREET.

DERMOID AND OTHER CYSTS OF THE OVARY :

THEIR ORIGIN FROM THE WOLFFIAN BODY.¹

BY

SAMUEL W. BANDLER, M.D.,

New York.

(With illustrations.)

THE current view as regards the origin of dermoids and teratomata of the ovary and testicle is founded by Wilms, supported by the work of Pfannenstiel, accepted in his text book by Martin, and also accepted by Veit, Sanger, Wendeler, and others.

Wilms says that the cutis lining the cyst interior covers only a prominence which he calls the *Zotte*. This prominence he calls the development of an embryo, connected with which is often a cystomatous formation of the ovary. “The structure of the prominence consisting of very different tissues, the presence of products of all three blastodermic layers, and the mutual situation of the individual tissues and organs, lead us to a comparison with embryonal development.”

Wilms says further: “Since only the ovary and the testicle produce such structures, it follows that a sexual cell must be the origin of the embryoma—a view which alone explains the

¹ Concluded from p. 701, May JOURNAL.

development of a three-layered germinal formation. These tumors take their origin from an ovum cell, either from an undeveloped sexual cell situated in the tubules of Pflüger or else from the ova cells of the primitive or developed Graafian follicle." In opposition to the view of Pfannenstiel, Wilms believes that the growth of the embryoma is the stimulus which causes the cystic formations. Pfannenstiel believes that some stimulus or irritation causes the formation of the dermoid cyst and also the formation of the cystomata.

According to Wilms this process "is no real parthenogenesis which produces a complete being; it is a tumor formation in the real sense of a tumor. Just as a connective-tissue cell may form a fibroma, an epithelial cell an adenoma, mesodermal cells the mixed tumors of the uterus, the vagina, the kidneys, etc., so may a sexual cell produce an embryoid tumor and ovarian embryomata. This fact is not to the advantage of the theory of Cohnheim, which, however, still holds good for a series of tumors, even though in a modified form."

"These tumors may be congenital, but come to development most frequently in the twentieth and thirtieth years. It cannot be denied that the basic formation for these may have been congenital, and that their development occurs at the various periods of life. The embryoma is nothing but a piece of an embryo, a rudiment of the same. Formations corresponding to the cystic ovarian embryomata occur in the testicle; nearly all cystoids, enchondromata, rhabdomyomata, cystosarcomata, cystocarcinomata, together with the mixed tumors of the testis, belong to a common form which may be called 'embryoid tumors' or solid testicular embryomata, because they contain products of all the three germinal layers. These tumor forms develop from a sexual cell."

We will first discuss this statement. We see that Wilms has come to the following conclusion: Because these tumors contain products of all three germinal layers, and because *the fecundated ovum* produces a fetus from a three-layered formation, *ergo* dermoids must also develop from an ovum. Since they also are congenital and occur during childhood, and during the twentieth and thirtieth years, and also later, a development without fecundation is accepted. That ectoderm may produce ectodermal products, that a connective-tissue cell may produce a fibroma, an epithelial cell an adenoma, and mesodermal cells mixed tumors, etc., is acknowledged on all

sides. That, however, from a sexual cell a growth, in the sense of a tumor, should be formed which not alone contains the products of all three germinal layers, but also these products in a grouping which fully resembles that of a fetus, is a view which goes far beyond the limits of pathology. That these products should also grow in the same degree as the cells and tissues of the patient, and should form long hair, second teeth, etc., is a view which gives to a non-fecundated ovum a power which as yet has not been observed in a fecundated ovum situated in an ovary or in the tube. In addition, in these dermoid cysts not all three germinal layers are represented; *entoderm fails entirely, and no evidence of so-called "entodermal tissues" or organs can be found.* What Wilms has described as entoderm we have frequently shown to be ectodermal products.

Formerly we believed it possible that entoderm was present, for the celom epithelium was held on many sides to be a derivative of the entoderm. The germinal epithelium is, however, as we have shown, *a derivative of the ectoderm, and the celom epithelium takes no part in its formation.* Celom epithelium is, in fact, only connective tissue.

In his work on "The Teratoid Tumors of the Testicle, Including the So-called 'Cystoids' and 'Enchondromata,'" Wilms distinguishes:

1. *Teratomata*,
2. *Dermoid Cysts*.—Under the former he understands also the various mixed tumors which were formerly described as cystadenoma mucosum, enchondroma, chondroadenoma, etc. I quote the following from the cases of teratoma of the testicle described by him:

"CASE I.—Externally the testicle is covered by the thick tunica albuginea, which extends in all directions into the capsule which surrounds the entire tumor, so that the tumor as well as the testicle is situated in the albuginea. Real squamous epithelial pearls, and cysts lined with squamous epithelium, are found only at one end of the tumor, an evidence that the squamous epithelial mucous membrane is poorly developed in comparison with the cylindrical cells. Derivatives of the skin are absent. The entire tumor is composed of young embryonal connective tissue, cartilage, smooth and striated muscle, *squamous epithelial cysts and tubules, and also cysts lined with cylindrical cells* which in their neighborhood show gland formations. Very numerous smooth-muscle fibres accompany the tubules and cysts as a well-developed muscularis. It therefore seems justifiable to say that the

tumor has developed from a three-layered germinal formation [!].

"CASE II.—In section through the entire tumor it is seen that the tumor lies within the albuginea, which is thinned and dilated. Careful dissection shows that some cysts are connected with each other by narrow ducts, so that the cyst combination may be considered as a chain of pearls, in which the uniting ducts form the string and the cysts form the pearls.

"The cysts which are surrounded by a muscularis contain a cubical or cylindrical epithelium. Here the epithelium is simple, there it is stratified; here its protoplasm is dark and grossly granular, there clear and translucent, and at other places it has the character of mucous cells. The grouping of mucosa, submucosa, and muscularis is sufficient proof of a resemblance to the grouping of tissues of the intestinal tract [? ?].

"At times squamous epithelium and cylindrical epithelium are found in the same cysts. The boundary of the two forms of epithelium is usually very distinct, a proof that these two forms do not develop from each other, but that both must have come to development in the same cyst, because cells of both germinal layers must have come into the cystic space. Likewise in this tumor, therefore, are found products of all three germinal layers, and most sparingly is found squamous epithelium from the ectoderm. In addition are found tubules lined with cylindrical cells, mucous cells and glands from the internal germinal layer [!], young connective tissue, cartilage, and smooth-muscle fibres from the middle germinal layer.

"CASE III.—It cannot be proved that the inner layer of the tunica vaginalis propria and the albuginea envelop the entire tumor and the remains of the testicle.

"That some cysts near which are cartilage and glands, together with the surrounding smooth muscle, and the lymph follicles lying under the mucous membrane, again call to mind the structures of the respiratory tract, it is scarcely necessary for me to mention [!].

"An important result of the examination, aside from this latter discovery, is the fact that this diagnosed carcinoma is a mixed tumor of the testicle which must be referred to a three-layered formation, since derivatives of all three germinal layers contribute in their well-known forms to its structure.

"CASE VII.—The two layers of the tunica vaginalis propria are loosely united. Since in a former examination there was an attempt to remove the albuginea from the tumor, naturally the testicle, situated at the upper end and at one side, was partially loosened also. As a proof, however, that the tumor was situated within the testicle there is found on the inner side of the loosened testicle no capsule, but the exposed testicle tubules pass over into the loose capsule of the tumor.

"Most of the spaces, corresponding to their mucous contents, are lined with mucous cells which have the well-known

beaker form. Under these epithelia are found forms which show a ciliated membrane.

"Around all these cysts run, concentrically arranged, thick layers of smooth muscle fibres which often cross in layers, corresponding to the muscularis of the intestinal canal. In some cysts the inner surface is not smooth, but is covered with broad villi consisting of a loose connective tissue rich in cells, which are broader than the villi of the digestive tract, but still resemble them.

"As products of the entoderm are found *cysts lined with cylindrical cells and partly with ciliated cells, and also glands* [1]. This is the only specimen in which the products of ectoderm are absent, or, better, in which no products of ectoderm could be found in my sections. At any rate, the ectoderm is in all these tumors poorly developed. On the other hand, it is possible that squamous epithelial cysts may have been destroyed in a manner to be discussed later, as I found to be the case in another specimen (Case 10).

"CASE X.—In fact, it is seen in section that the albuginea covers the entire tumor and, as a result of dilatation, has become very thin.

"In this tissue, without macroscopical evidence of a connection with a normal rest of the testicle, are found three nodules the size of a small apple, which are separated by a thick capsule from the rest of the tumor showing the same structure. Aside from these three nodules showing a more varying and complicated structure, there are found three other isolated nodules of the same structure and of the size of a pea. Their structure represents a typical teratoma, and I therefore will call these nodules 'teratomata.'

"The examination of this interesting specimen strengthens the statement that the teratomata of the testicle regularly contain *products of all three germinal layers*, squamous epithelium and cylindrical epithelium, mucous membrane, embryonal connective tissue, colloid tissue, cartilage, bone, smooth and striated muscle fibres. This case seems to speak for the possibility of multiple occurrence of teratomata. The fact that in all the individual nodules, and even in the smaller ones, all three germinal layers were represented might speak for the independence of the individual tumors; on the other hand, it seems probable that through the development of the carcinoma or of the adenoma, as the diffuse tissue growth may be called, parts of the primary tumor were detached—parts which contained cells of all three germinal layers [1].

"The horny pearls lying on the connective tissue cause the formation of a structure resembling granulation tissue with numerous giant cells. It seems that these giant cells have brought, through arrosion, these horny masses to disintegration and resorption, for we find spaces which are lined with giant cells and in which only a small destroyed amount of horny pearls are present. In Case 7 I was not able to find squamous epithelium, in spite of the fact that it

was without doubt a typical teratoma. Analogous to the last described case, it is perhaps possible that in the above-mentioned manner the already existing squamous epithelial tubules of Case 7 may have been destroyed; yet I do not dare to make such a statement, since in that case *nothing pointed to such an activity on the part of the giant cells.*

"At any rate, in all our examined specimens there is no doubt that the teratomata lie with the testicle and in direct connection with it inside of the albuginea. The rule is, therefore, that the vas deferens and the epididymis take no part in the development of the tumor. In all the teratoid tumors of the testicle examined by me *the products of the external germinal layer are least developed. Fully-developed derm is never present; the tissues of the central and peripheral nervous system were present in no case.* The entoderm is the layer which in all these mixed tumors is most completely developed [!]. It grows, like the squamous epithelium, in the form of cylindrical-celled tubules which have a fine lumen in the centre. According to the growth and secretion of the epithelia these tubules develop into cysts. The cilia, when present, are very high and *correspond to the high cilia of the trachea.* The epithelium of most of these spaces is a high cylindrical epithelium. The cells show partly a dark granular protoplasm and partly are typical mucous cells with smaller or larger mucous drops. In general the inner surface of the cyst is smooth, *but now and then papillary or villous formations are present* which recall the villi of the intestine. A frequent form of gland was found in several specimens; it consists of a corkscrew arrangement of the gland whereby the width is gradually increased. It is the same form which is given in the schematic drawings of the twisting tubules of the testicle, for instance, by Brösicke. I have left those pictures occurring in many cases out of consideration—namely, the occurrence of the products of the ectoderm and entoderm in one cyst—in that cysts were lined at the same time by squamous epithelium and by cylindrical epithelium.

"All these tumors contain products of all three germinal layers. In all these tumors we find undoubtedly a resemblance to the individual cell and tissue forms of a human embryo" [!!].

It may be observed that Wilms speaks of entoderm products and structures resembling those of the respiratory tract and the digestive tract, without any proof. The fact that in some cases one and the same cyst was in many instances lined with squamous epithelium and with cylindrical epithelium shows with what little justice Wilms, who is justified in calling squamous epithelium ectoderm, calls cysts lined with cylindrical or ciliated epithelium and surrounded by muscle fibres products of entoderm.

From the section "The Dermoid Cysts of the Testicle" I quote the following by Wilms:

"Verneuil found in a two-year-old child a tumor, the size of a hen's egg, in the scrotum. On section the testicle was found flattened between the tunica vaginalis and the main tumor. For this reason the tumor was called 'an extratesticular or scrotal tumor.' Verneuil considered, as a result of his observations and based on nine other cases quoted by him, that all such tumors in his opinion were peritesticular or scrotal and were malformations resulting through inclusion." Since Wilms wishes to consider this case also as having originated in the testicle, he says as follows: "If the scrotum, as in the case of Verneuil, is freely movable over this large tumor, and the testicle and epididymis externally cannot be marked off, it is probable that we are not dealing with an extratesticular or real scrotal tumor. Between the testicle and the visceral layer of the tunica vaginalis propria no tumor can develop, since the latter is only an epithelial covering of the albuginea. All these tumors lie, if they are inside of the visceral layer, also inside of the albuginea—i.e., they have originated in the testicle."

Wilms says the following concerning a case of Geinitz: "This fact, that a separation from the testicle caused difficulty, proves directly that the tumor must have been in close connection with the testicle; for if the tumor, *as the author believes, had been situated in the scrotum*, a removal of it from the testicle would have been possible without difficulty."

Karning said concerning a testicular dermoid "that the tumor lay between the albuginea and the tunica vaginalis visceralis, and, for that reason, *had nothing to do with the testicle*." In spite of this, Wilms says: "I have already shown sufficiently the impossibility of such a situation."

Böckel believed that in his case "a removal without castration would have been possible if a diagnosis had been made before operation." After castration it was found that the testicle had been pushed posteriorly and downward, and the tumor appeared embedded in the deeper layers of the scrotum.

In a case of Corneil and Berger the following was found, according to Wilms: "Since the operator desired to preserve the testicle, he dissected the cyst wall from the testicle, a process which occurred without difficulty. Only at the corpus Highmori were firm connections with the testicle present, whereby larger vessels also had to be ligated." Wilms says:

"In spite of this distinct connection with the testicle, these authors still followed, in their further explanations, the old view of Verneuil in that they called the tumor 'extratesticular.'"

Wilms says further: "If we examine the statements of the authors more closely, it follows from their own statements that the tumors in the testicle originated there. They usually are connected with the *corpus Highmori*."

In these dermoid cysts were found almost the same products as are found in dermoid cysts of the ovary, i. e., teeth, central nervous tissue, so-called "intestinal structures," etc. Wilms finds that, in contrast to the ovarian dermoids, the dermoids of the testicle are almost all congenital.

Because these tumors have been by so many authors described as extratesticular or scrotal, and because these tumors are usually connected with the *corpus Highmori*, and further because the following case of Wilms is a proof, we must, in opposition to Wilms, come to the conclusion, as is also evident from the quoted cases, that at least some of these dermoid cysts were found *outside of the tunica albuginea*.

Wilms examined a case which Kocher described in the following terms: "The testicle sits upon the tumor posteriorly and superiorly; its anterior surface is flattened by the tense cyst." As a result of the description and the drawing which Wilms gives, I believe that Kocher is right when he says "this dermoid developed on the anterior surface of the testicle, *between the testicle and the vaginal membrane*, in such a way that between the cutis-like mass and the parenchyma of the testicle was situated a fatty tissue corresponding to the subcutaneous tissue—a condition of importance in deciding its origin." The drawing resembles the condition found in our Fig. 62, with the difference that the testicle, which corresponds to the ovarian tissue (*a*, Fig. 62), is separated from the cyst by a connective-tissue membrane, which is absent only at that point where the dermoid prominence was situated. This membrane is a part of the cyst wall, and does not cover the testicle, but only divides it from the tumor. Wilms found in his cases of testicular teratomata that the tumor tissue was usually separated from the rest of the testicle by a connective-tissue membrane. *This membrane has been considered by other authors to be the tunica albuginea*. Since Wilms, however, found that in all his cases another membrane was present around the entire tumor, he considered this membrane, viewed

by others as tunica albuginea, to be one resulting through irritation. At any rate, it must be granted that the testicular teratomata perhaps are found only in the testicle, while the dermoid cysts, on the contrary, are situated at the corpus Highmori and perhaps outside the tunica albuginea.

If we compare these conditions we find the following:

<i>Dermoids of the Testicle.</i>	<i>Teratomata of the Testicle.</i>
Situated at the hilus of the testicle outside the tunica albuginea, and for that reason described as "extratesticular" or "scrotal."	Situated perhaps within the tunica albuginea.
Few cysts are found in the dermoid prominence.	Contain numerous cysts of various forms. Sometimes the tumor consists of cysts only.
Ectoderm products present in large amount.	Contain little or no ectoderm products.
Contain hair, teeth, and glia tissue.	Contain no hair, no teeth, and no glia tissue. Squamous epithelium often present as the lining of cysts.

If, as Wilms believes, these tumors originate from a seminal cell, why this decided difference in their situation, in their structure, and in their arrangement?

In what way does Wilms prove that any of these cysts are entodermal products?

I deny absolutely that these cysts are derivatives of entoderm. They are surely nothing but developments from the tubules of the testicle itself or from the paradidymis, and these tumors are composed only of ectoderm and mesoderm.

The variation in the structure of these two forms, dermoid cysts and teratomata, can only be explained on the theory that these tumors are caused by displaced cells. As is known, the tubules of the Wolffian body pass from the Wolffian duct up to the celom and the later germinal epithelium. In the female they remain as paroöphoron and epoöphoron at the hilus ovarii, and in certain cases portions of these are found in the ovary. In the male, on the other hand, these tubules are present in the testicle as functioning tubules, the tubuli recti. Others form the tubuli efferentes of the epididymis, and others remain as the organ of Giraldès and as remnants, but outside of the hilus testis and near the corpus Highmori. Since the Wolffian body tubules develop from the Wolffian duct (ectodermal origin), we must believe that those parts which lie nearest to the Wolffian duct, and especially because they are regressive structures and

without function, possess the elements of ectoderm most decidedly. If this be the case, it seems natural that the nearer to the hilus of the testicle (*i.e.*, not *in* the testicle) a tumor develops, the more distinctly should ectodermal products result, as the dermoids are extratesticular and the teratomata intratesticular. I believe that the fact that in testicular teratomata squamous epithelial cysts occur, as well as cysts lined with both cylindrical and squamous epithelium, speaks decidedly for the ectodermal origin of those tubules of the testis which we know to be formed from the Wolffian body. The further fact that in the dermoids of the testicle teeth and glia tissue occur (and not in the teratomata) speaks for the above-expressed explanation of the variation in the structure of these two forms of tumors, for these tissues are ectodermal (teeth only partly). Glia tissue is only a product of the ectoderm, and teeth occur only where ectoderm and mesoderm are found, since teeth are really ossified skin papillæ. How else can the absence of ectoderm products be explained in the teratomata? They develop in the testicle, and not at the hilus, and are further away from the ectodermal elements at the hilus. If our theory is not correct, and if, for some reason or other, skin and its ectoderm products are not formed in teratomata, why, in spite of this fact, is no glia tissue formed, which Wilms considers to be the central nervous system of a fetal formation? Since Wilms in the dermoids of the testicle and ovary always finds cephalic structures as the products first differentiated in the development of an ovum or seminal cell, and since in testicular dermoids bone is so frequently present, why is there found in teratomata no glia tissue, which develops decidedly independently, and quite differently than the skin? Why are there no maxillæ, why no teeth, in the testicular teratomata? His statement that certain combinations in the teratomata of the testicle represent the respiratory and digestive tracts is so absolutely voluntary that I will not criticise this statement further. When we recollect, however, how complicated is the development of the intestine, the manner in which the mesoderm develops and in which certain mesenchym cells are pushed forward to surround and form the intestinal canal and to furnish it with its muscularis, we may then understand how absolutely without foundation is a statement that glands and tubules lined with cylindrical cells and with papillary projections represent the intestinal tract, because they are surrounded by muscle fibres, and that, too, in such mixed tumors

wherein the cephalic structures are supposed to predominate, in tumors which develop in an organ containing tubuli recti, rete testis, ductuli efferentes, and which in its periphery has the organ of Giralaldès and embryonal remnants, of which at least the ductuli efferentes possess a wall consisting of several layers of smooth-muscle fibres. This same wall, especially under pathological conditions, may well be granted to the tubuli recti, the tubules of the organ of Giralaldès, and the embryonal remnants, as is normally the case in the parovarian tubules near the ovary. Wilms is mistaken when he says that the Wolffian body furnishes the testicle only with its stroma, and that the seminal tubules in both their forms originate from the germinal epithelium.

TUMORS OF THE OVARY.—As regards the cystic structures of the ovary, we must distinguish the following forms:

1. Hydrops folliculi, without epithelium.
2. Corpus luteum cysts.
3. Cystoma serosum simplex, usually the size of a child's head and pedunculated, yet often intraligamentous; they contain a clear fluid. The inner surface is usually lined by a low, simple cylindrical epithelium. They, as a rule, show no proliferating glandular formations, but not seldom evidence papillary excrescences.
4. Cystadenoma serosum papillare, often bilateral, containing sometimes ciliated epithelium and sometimes none.
5. Cystadenoma pseudomucinosum, glandulare, or papillare.
6. Surface papilloma.
7. Grape-like cysts which are a transition form of 4 and 5.

Pfannenstiel believes that No. 3 develops from the follicles. Nagel believes such a transformation of the follicle epithelium to be impossible, for on the disappearance of the ovum the membrana granulosa is destroyed. Concerning the origin of Nos. 4 and 5, as we have shown, various authors are at variance. Among those who believe that the glandular cystadenomata develop from the primordial follicles is Steffeck, who, in a drawing of a follicle with an ovum, believed that he had shown epithelial projections in the former; but, as Wendeler says, his drawings make the impression that we are dealing with cysts or tubules lined with epithelium and that the ovum is nothing but an epithelial cell. This form of ova-like cells is shown in Fig. 85.

Flaischlen believes that he furnished proof of the origin of a cystadenoma from persisting fetal ovarian tissue. From his

drawings, since this structure was found in a dermoid cyst, it is certain that he was describing the same glandular tubules as were found in dermoid cysts Figs. 77 and 82. Wendeler, in considering this tissue, calls it "thyroid gland"—an error often made by those who have described the microscopical appearance of ovarian dermoid cysts.

Pfannenstiel believes that the adenomatous neoplasms have been proved by him and by others to originate from the covering epithelium of the ovary and from the epithelium of the follicle, but he does not consider all these proofs as positive. He shows a drawing in which cysts lined with ciliated epithelium have been formed from the surface epithelium. However, he has not shown that these cysts have not opened upon the surface instead of having originated from the surface. He believes that the pseudomucin cystomata originate from the follicle epithelium, and he shows drawings which are supposed to represent the transition of a follicle into a pseudomucin cyst. His drawings contain also those ova-like cells. A comparison with our drawing, Fig. 83, shows that we are dealing with no follicle and no ova, but with cysts which contain the same large cells with distinct nuclei as we have illustrated in Fig. 85.

As yet, therefore, no one has shown the transition from follicles to cystadenomata. Concerning the possibility of the origin of the latter from the epoöphoron, Pfannenstiel says that such a view, from the theoretical standpoint, does not seem impossible, but is improbable because epoöphoron tubules do not occur in ovarian tissue. This latter statement is incorrect, for the presence of these tubules in the ovary itself has been proved in many cases. He considers the pseudomucin cystomata as originating from the follicle epithelium, and the serous cystadenomata as originating from the ovarian germinal epithelium, and says: "When we consider the fundamental difference between an epithelial cell of a pseudomucin cystoma and a ciliated cell of a serous cystadenoma, and when we consider that these two tumor forms are almost never united in one tumor, it seems to us incorrect to transfer conditions which concern the one group to the other." This is a view which cannot be defended, for a pseudomucin cell is only another form of a ciliated cell, and it is still more strange to consider a pseudomucin cell as originating from follicle epithelium. In many sections of Cases 2 and 5 (Case 2 was described for this reason) we see how ciliated epithelium gradu-

ally goes over into a high epithelium with membrane, but without cilia, and how this epithelium at other points contains beaker cells. In Fig. 63 we find in cysts *a* and *b* stratified ciliated epithelium and stratified epithelium with excrescences. In Case 2 we find in the ovarian cysts ciliated epithelium, and in the intraligamentous cyst *e* ciliated epithelium with projections, and papillary excrescences which are covered with ciliated epithelium and with epithelia containing beaker cells. In Fig. 70 we find cylindrical epithelium, ciliated epithelium, and epithelium with beaker cells going over into each other, and yet the underlying ducts and tubules are without cilia. In Fig. 79 the inner lining of the dermoid cyst shows a ciliated epithelium, and yet derived from it are glandular structures lined with cylindrical and ciliated epithelium and the cyst *a* whose epithelium shows cilia and excrescences. Whether the smaller cysts are derived from this surface ciliated epithelium, or whether the surface ciliated epithelium is derived from the little cysts which open upon the surface, cannot be decided; at any rate, the connection between the two is certain. In Figs. 77, 82, etc., we have epithelia which in Fig. 92 show the transition from cylindrical epithelium to epithelium containing beaker cells.

If, therefore, we compare the various forms of cysts of the ovary and the glandular structures which are found in dermoid cysts of the ovary, on the one hand, with the cysts of the testicle and of the testicular Wolffian body remnants, and the glandular structures which are found in teratomata and dermoid cysts of the testicle, on the other hand, we must say that the origin of both is the same. Since the cystadenomata of the testicle can develop only from the Wolffian tubules, whether the latter are tubuli recti, rete testis, or the organ of Giraldès or Wolffian remnants, we must, at any rate, accept the same mode of origin for the cystadenomata of the ovary. In Case 2 we have in the ovary and in the intraligamentous cyst *e* the same lining, so far as ciliated epithelium is concerned. Since in the cyst *e* are found also epithelia with beaker cells and also tubules of the form of the glands of *Lieberkühn*, the same epithelia may also occur in the ovary, as is the case in the pseudomucin cystomata. Since the intraligamentous cyst *e*, Fig. 66, is without doubt a parovarian product, we can with justice say that the same tubules are the cause of the ciliated cysts in the ovary (*a*, Fig. 66).

Nagel says:

"Von Recklinghausen has recently adopted the view that the cystomata of the ovary originate from rests of the Wolffian body, and I believe that he is right. For the ciliated cystomata such an opinion has already been given, in that they are considered to originate from the parovarium. The tubules of the epoöphoron sometimes extend far into the hilus of the ovary, and the epithelium of the epoöphoron is not always and everywhere covered with cilia, so that not every cystoma originating from these tubules must be a ciliated one. In the remnants of the Wolffian body we have a heterogeneous structure consisting of epithelial tubules, from which, as Von Recklinghausen's investigations have in no slight degree proven, cystic tumors may develop. The origin from Wolffian body tubules also clearly explains the fact that the ovarian tissue, as a rule, disappears even in the smaller cystomata, for a neoplasm entering from the hilus extends in all directions, and at the same time involves the ovarian tissue, while a growth beginning at any point of the surface does not so involve the ovary. This view of Von Recklinghausen, as to the origin of cystomata from the epoöphoron, has been considered in my division, in that, following the suggestion of Corneil, the erroneous term 'adenoma' has been entirely omitted, and *the papillary and ciliated cystomata have not been considered as special tumors, but only as forms of the cystomata.*"

Concerning papilloma ovarii Nagel says:

"Some consider the surface papillomata to be penetrating papillary cystomata; others consider that they develop on the surface of the ovary through growth of the ovarian epithelium. For the former view speaks the fact that often, at various points of a papilloma, cysts or remnants of a cyst wall are found whose inner surface shows numerous papillary growths."

The grape-like ovarian tumors or cystomata, Pfannenstiel believes, originate from remnants of the Wolffian body. According to him, transition forms from the usual cystadenomata to the grape-like cystomata are not infrequent, *i.e.*, tumors whose individual cysts are more or less pedunculated.

Since these various cyst forms which are most easily explained as originating from the Wolffian tubules are also found in the dermoid prominence of testicular and ovarian dermoid cysts, and since in the latter these structures, as well as gland ducts, occur in the pedicle or base of the prominence, we must grant that the Wolffian body or its tubules form the centre of the prominence, and that about them the displaced cells have formed their products. This would easily explain

the occurrence of muscle fibres around the cystic structures in the dermoid prominences. (See Figs. 76, 79, 81, etc.)

As regards the view of Wilms whereby these dermoid cysts are the result of a parthenogenetic development of an ovum or seminal cell (without fecundation), I mention the following. Wendeler and others attempt to support this view of Wilms through the quoted statement that the division of non-fecundated ova has been observed in rabbits, etc. But the authors whom Wendeler quotes and who have observed this cell division expressly state that these ova always degenerate. Even Hensen, whom Wendeler quotes, says *that this segmentation observed by him has not the slightest to do with segmentation of a fecundated ovum, and that in this connection he referred in no degree to a parthenogenesis.* Prof. Spee expressed the opinion to me personally that a parthenogenesis in these cases was not to be considered. Nagel is of the same opinion. Waldeyer, who expressed years ago the opinion that possibly a parthenogenetic development occurred from the elements of the germinal epithelium, of which a number were to become ova, does not to-day hold this view.

The former and generally accepted view of a parthenogenetic segmentation of the hen's egg is now referred to a fecundation by dying spermatozoa, and Barfurth and Lau show that the parthenogenetic segmentation and development of the bird's egg is only an irregular process of segmentation.

Sobotta asks "whether we can really any longer believe *that the egg of mammals is subject to such a process*, since we know what we do concerning the process of fecundation of the animal ovum, and since for the last resort of parthenogenetic segmentation (such a process in the hen's egg) proof has been given that such a process does not occur."

Wilms says further:

"The cysts occurring in the connective tissue of the pelvis consist, so far as is known, only of cutis and have nothing in common with the ovarian tumors. The retroperitoneal dermoids in the region of the kidney are to be referred to the ectodermal origin of the Wolffian duct. The inner surface of dermoids which occur at points of union is generally entirely lined with epidermis, yet even in them *dermoid prominences occur which externally resemble the prominences in the ovarian embryomata, as in the mediastinum.* The internal structure of these prominences, however, does not correspond to that of the ovarian embryomata."

Since the dermoids which occur at points of union consist of, or develop from, already differentiated cells, we can easily understand why they are not so complexly formed as the dermoids of the ovary, where only embryonal cells are displaced, and these later become differentiated into bone, cartilage, muscle, etc. The so-called "prominence," as we have seen, is nothing belonging specifically to the dermoids of the ovary, for it occurs also in the mediastinum, and we have shown that their external appearance and internal structure are quite alike (Figs. 21, 22). At any rate, the dermoids of the mediastinum originate from quite a different area, and the anatomical conditions do not permit us to expect that they should contain the same complicated tissue forms. We have already shown that the retroperitoneal dermoids, which, as Wilms grants, are caused by the Wolffian structure, contain very complicated tissue formations (see Figs. 8 and 9 with description of Marchand) and also striated-muscle fibres. It is difficult to understand why, if Wilms' theory is correct, striated-muscle fibres should be found so rarely in ovarian dermoids. If the products of all three layers, with a grouping entirely corresponding to that of a fetus, originate from a non-fecundated ovum, why should there not be striated-muscle fibres in every case? Why only parts of the so-called "embryom"—why never placenta or membranes which also originate from the germinal layers of the ovum?

Wilms says also:

"The prominence is a rudimentary embryonal formation, which occurs in this way, that in a small and not roomy cyst a germinal or fetal formation attempts to develop. Through the mechanical disturbances in the way of growth in the small cysts, only the tissues which are first differentiated come to development in this fetal formation, and *the rest are destroyed in their beginning by the first*. With this easily understood statement an explanation is rendered concerning the peculiar structure of the prominence and concerning the fact that ectoderm predominates while the entoderm shows only small rudiments."

I do not find such an explanation to be easily understood. It does not explain the difference in structure between dermoids and teratomata, and, besides, the teratomata of the testicle consist almost exclusively of so-called "entoderm" and very little ectoderm is present there. It is a peculiar theory that the tissues which are first differentiated have the

power, after they destroy the other cells, to continue their growth. Wilms considers that the cephalic tissues are those which are first differentiated, because he finds teeth, so-called "brain tissue," maxillæ, etc. These, however, *are not cephalic structures, for teeth occur in dermoid cysts in almost all parts of the body*—for instance, in dermoids of the hypophysis, in dermoids of the mediastinum, in such behind the kidney, etc. The glia tissue of the nervous system, which is to be considered only a product of ectoderm, has been found in the various cases quoted by us, in the retroperitoneal dermoid of Marchand, in the cervix teratoma of Geyl, and very plentifully in Case 9. In the cases of Marchand and Geyl there was surely no connection between this nerve tissue and any neighboring normal nerve structures. The bones in dermoids grow irregularly and can take on all possible forms, and, since in them teeth are not infrequently found, it is no wonder that they have often been called "maxillæ." We find in Fig. 100 a bone showing on its inner end eight firmly seated teeth, second teeth. To answer all questions concerning their origin, only the following must be taken into consideration: In this cyst the bone grew so that it was covered on all sides by ectoderm of the character of the skin. Hereby, through the presence of ectoderm and mesoderm, the formation of teeth resulted, just as normally the teeth in the mouth are the products of the presence of ectoderm and mesoderm, and the same process may occur in any dermoid cyst.

Wilms says:

"Through a decided pressure within the cysts the displacement of the organs of the embryom is a more decided one and the dermoid prominence is absent. Yet all three germinal layers are in evidence. In some cases the anterior region of the embryom predominates or is prominent—*i.e.*, the mouth in which the development of teeth has occurred. Everything else lies compressed in the cyst wall. If the cyst wall is not elastic, there result very rudimentary forms. If the cyst in which the germinal formation develops can be dilated, and if the embryom has the opportunity to become further differentiated and to bring the various organs to more complete development, then the cranial bones can develop to the formation of a complete cranium, large maxillæ with rows of teeth occur, as also thyroid gland, *salivary glands*, trachea, intestine, eye, brain in enormous extent, extremities, etc. In all specimens the central nervous system can be found, because those organs which are formed early are present, as a rule, in ovarian embryomata."

We see what hypotheses Wilms brings forward to explain the origin of the various complicated cysts. An ovum is capable of normally dilating the uterus; it grows in the tube until it bursts through the wall, or it may continue its growth in the abdominal cavity, but in the ovary it cannot dilate the cyst wall but lies compressed in it.

I believe that the retroperitoneal case of Marchand disproves the statement of Wilms to the effect that "the development of solid ovarian 'embryomata' (teratoma) occurs only in the ovary and not at other points of the body."

Wilms says:

"These teratomata take their origin from a sexual cell, but the embryonal tissue grows without limit, and in this limitless growth lies the characteristic difference between them and the cystic dermoids. Characteristic is also the formation of entire organs of an embryo; at various points normal tracheal tissues are produced. If around mucous cysts with villous formations there is grouped a single or double layer of smooth muscle fibres, and if under the epithelium of the cysts are found lymph follicles, and even entire Peyer's patches, then the resemblance to a rudimentary intestinal formation is not to be mistaken."

We have already shown that these "intestine-like formations" are products of ectoderm or of the Wolffian body, and that in every way they show the character of a simple cystoma mucinosum of the ovary and are nothing else than salivary-like structures. As regards the tracheal tissues, these are areas in which, near cysts lined with stratified cylindrical or ciliated epithelium and never the so-called "mucous cysts," cartilage is present—areas which we have shown in several of our own specimens (see Fig. 64), and which are also present in Case 9 and in numerous ovarian and other dermoids. Weigert described these intestine-like structures in his "teratoma orbitæ congenitum," Marchand in Figs. 8 and 9, etc. Weigert also described "bronchial elements" in his case.

As we shall state later, exactly the same tissue combinations have been described by some in dermoid cysts of the ovary as intestinal structures, and by others, because cartilage was present, as trachea, and by others as the nasal tract. We have already seen that muscle fibres are often present in profusion in the dermoid prominences, and how they have a tendency to be grouped in one or two layers about cystic or dilating structures. In spite of this Wilms says:

"Smooth-muscle fibres are grouped in distinct layers around the cysts and ducts lined with epithelium and belonging to the respiratory and digestive tracts, and especially about the intestine they are arranged in a double layer like the normal muscularis. Striated muscle seems to be seldom present. The internal germinal layer is not so well developed as the external layer. Through mucous glands and islands of cartilage lying near ciliated ducts, and through numerous layers of smooth-muscle fibres, the pictures correspond in the minutest details to the trachea."

Wilms believes that he finds centres of this region in all specimens. He says:

"The organs of the digestive tract are rare. Smaller intestine-like tubules, ducts, and cysts with mucous or cylindrical epithelium, with a basal membrane and beaker cells, with lymph follicles in the mucous membrane, with a loose submucosa and a muscularis, I have found very often. Larger and macroscopically recognizable intestine with mesentery have been rarely observed [but not by Wilms]. Liver, kidney, etc., have not been found. Von Recklinghausen found in one cyst *a structure resembling in its entire form the fetal genital gland—namely, the Wolffian organ*. Several exact observations of extremities exist, and fingers with joints, joint-like unions of bone, ribs, etc., have been found. Thyroid-gland formations have also been described. I have seen three times relatively extensive thyroid formations which differ in no way from the usual thyroid gland. In one case I found a lung formation. The above-quoted discovery of a rib proves that thoracic parts may be found."

Wilms believes that all this proves that "the ovarian embryom is able to reproduce, even to the minutest detail, the structure and character of normal organs. Rudimentary development of eyes has been frequently observed; the most complete observation is by Baumgarten." In order to show upon what groundless foundation this hypothesis is supported, it is necessary to read the descriptions of the various reported cases in which it was considered that cranium, thyroid gland, mamma, nose, trachea, intestine, etc., were present. The exact description of these cases shows that they contain the same tissue groups as in the quoted cases of Rindfleisch, Weigert, and Marchand—*i.e.*, dermoids or teratomata of hypophysis duct, of the eye, and of the kidney region. All these were described as fetus in fetu.

Since Wilms says that Von Recklinghausen "found in a cyst a structure resembling in its entire form the fetal genital

gland—namely, the Wolffian organ,” I quote the following from the description of that case. It is certain that this discovery speaks for our theory of the origin of ovarian dermoids.

“In section there was found:

“1. On the surface a one-half-millimetre-thick cutis with hair follicles.

“2. Beneath it fat tissue.

“3. Within it islands of cartilage and cysts (a) with cylindrical epithelium, (b) dermato-cysts.

“4. Deeper down, bone either as projections or as plates. In the other section—namely, that connected with the cyst wall—the nodules are solid and consist of a soft white tissue. Closely grouped but epithelially arranged cells and strands forming a built-up network lie in a connective-tissue stroma, so that the entire structure resembles a fetal genital-gland formation—namely, the Wolffian body.”

I must mention here that Wilms found in one dermoid prominence a thick blood vessel dividing into a branch leading to the mouth (carotis interna) (!) and an artery leading to the brain (carotis externa) (!), and that in the description of his cases he follows closely the course of the so-called “brain” with lateral ventricles, central canal, etc. (??).

I quote the following case by Wilms, which he puts at the head of his description “because it is a real, perfect example” of his views concerning the character of ovarian dermoids. He says: “The relations are seldom seen so simply and so clearly.”

“*Cysts with Simple Prominence containing Scalp, Cranial Bones, Brain, and Intestinal Canal.*—The larger cystic portion of the tumor consists of two spaces, of which the one is a simple ovarian cyst, while the other is filled with hair and sebum and proves to be a dermoid cyst. The thin, almost translucent wall of the dermoid cyst is covered with a thin layer of epidermis which consists only of cells of the rete Malpighi and of a delicate stratum corneum. Near the ovary there projects into the lumen of the cysts a thick prominence covered with cutis and hair.”

“The internal structure of the prominence is easily recognized (in Fig. 105). The drawing, which shows the natural relations enlarged four times, shows how from the connective-tissue capsule a projection passes off which becomes smaller toward the end. Surrounded by skin, it presents only at its point a small opening, the excretory duct of a tube to be later described. The skin (a) on the surface is well developed and filled with numerous large sebaceous glands and sweat glands. Near the large sebaceous glands are a few hairs which pene-

trate into the subcutaneous fat tissue (c). The connective tissue of the skin is very firm. Smooth-muscle fibres are here present in small amounts. The epidermis shows all the normal layers. The skin on the under surface of the prominence (b) is not so well developed and shows only few glands and hairs. The subcutaneous fat tissue, which on the upper surface is well developed, is here entirely absent. The entire skin envelops a flattened tube of elastic connective tissue (d), which also is most completely developed on the upper surface. Toward the point of the prominence the tube is not closed, but extends quite up to the skin. At the opposite end the elastic tissue passes over gradually into the connective tissue of the cyst wall without sharp demarcation. In the midst of this elastic covering, which, as said, lies under the thick cutis, is found a four-millimetre-long, flat, marrowless bone (e) which, presenting few Haversian canals, shows a distinct lamellar arrangement. The connective tissue near the bone is richer in cells, but a distinct layer of osteoblasts, which prove an existing growth, is not present.

"In order to make the description of the skin and the underlying elastic tube more clear, I will now call attention to the fact that we must consider the skin as the scalp and the elastic tissue as cranium with a rudimentary cranial bone [??]. This view is absolute if we examine more closely the contents of this elastic tube. It is filled with a flat cerebral substance (f), 1.5 centimetres long and 2 millimetres thick, and forming the main element of the prominence. A division into white and gray substance is impossible even with the aid of Weigert's stain. In spite of careful hardening, only here and there areas are stained after Weigert. Since this would lead me too far into details, I will not go closely into the description of the various forms of ganglion cells. The glia tissue is richly developed in comparison with the specific nervous tissues, and seems, through its strong growth and because of the lack of space, to have prevented the development of nerve fibres and nerve cells. About in the middle of this brain mass and parallel to the long axis of the prominence is a canal lined with cylindrical epithelium (g) which corresponds entirely to the central canal—i e., to the brain ventricles. The vessels of the brain are well developed and run in their main branches (h) parallel to the long axis of the prominence. The areas of the elastic capsule lying directly on the brain mass show a wavy structure and seem to represent the *dura mater*. A noticeable condition in the brain is presented by groups of corpora amyloidea (i). Most of these have a more or less distinct concentric arrangement and are like the same structures occurring in senile brains. Since these structures occur so frequently in the other cysts, I must mention here what is necessary concerning them.

"I find in the literature only scattered references concerning the occurrence of such amyloid-like structures. This is strange, for it is in contrast to my own experience, for I found

such bodies present in all my specimens of dermoid cysts of the ovary. I mention that they were for me of great value in the beginning of my examinations, as they called my attention to the central nervous system through their noticeable form, easy of recognition. As may be seen above, *the appearance of such a brain is microscopically different from that of the normal central nervous system through the strong development of the glia fibres.* Without going further into the still unexplained origin of these amyloid bodies, I will only mention that their regular occurrence in dermoid cysts under such disturbances of growth and mechanical injuries (through preparation for examination) speaks for their origin from expressed myelin.

"The nerve substance of the brain, as may be seen in the drawing, becomes thinner and smaller toward the point of the prominence. The extreme end is covered on the upper surface by the elastic membrane of the dura, while on the under surface the elastic membrane ends at some distance from the point of the prominence. I leave it unsettled *whether we may make here a comparison with the exit of the nervus opticus* [??]. At its anterior end the brain substance dilates again and surrounds a space lined with cubical epithelium (*k*). Into this space projects a mixture of prominences *which resemble closely the villi of the plexus choroideus* [??]. These structures consist of vessels which are covered externally by a layer of cubical cells. The lumen of this anterior space, *perhaps to be compared with the lateral ventricles*, does not stand connected with the lumen of the already-mentioned central canal, but shows a connection through a band rich in cells which seems to be the continuation of the compressed central canal.

"Under the anterior part of the nervous layer at the point of the prominence is a canal (*e*), one centimetre long, showing a distinct layer of high ciliated epithelia. The latter have very high cilia and resemble absolutely the epithelial cells which occur normally in the respiratory tract. The lumen of the canal is dilated, the wall is slightly folded. The canal opens at the point of the prominence as a fine canal, where its ciliated epithelium is sharply demarcated from the squamous epithelium of the covering skin. The immediate surroundings of this canal, *which is to be considered as the intestinal canal*, is formed by smooth-muscle fibres and elastic connective tissue.

"The description of the prominence being completed, we will attempt to make clear its resemblance to a rudimentary fetal formation. When we consider the first formation and the further differentiation of the three germinal layers, we observe at once the resemblance of the described prominence to those formations at certain stages. We come to the conclusion that the development of the medullary furrow into the medullary canal has taken place. Within it the central nerve substance, as an ectodermal derivative, has come to decided

development. Under the brain, which is enclosed by the dural sac, the pericranium and a cranial bone have been developed. The skin above it, *which resembles fully the scalp*, is well covered with hair on the upper surface and has *followed well the normal forms.* The mesoderm, in contrast to ectoderm, is less developed. *The only entodermal formation to be found is the small canal lined with ciliated epithelium. It represents the combined formation of the respiratory and digestive tracts in the most rudimentary forms [??].* How far the normal condition, in minute details, has been imitated I cannot follow further. My duty is limited to proving, if I may say so, *the macroscopical resemblance of the dermoid prominences to embryonal formations."*

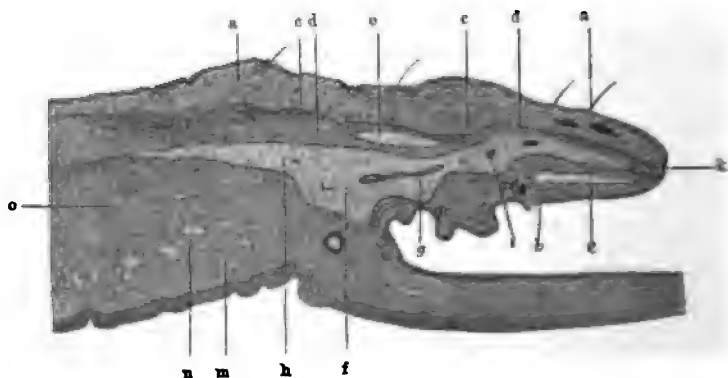


FIG. 105.

When we consider this "perfect example," we find really a prominence covered with squamous epithelium which on one side passes over the base upon the ovarian substance. In this prominence we find sweat glands, sebaceous glands, connective tissue, a piece of bone, a canal (*g*) lined with cylindrical epithelium, and a depression of the surface (*e*) lined with a high ciliated epithelium. This depression (*e*) Wilms calls "entoderm," supposedly representing the combined formation of the respiratory and digestive tracts "in a most rudimentary form." It is certainly interesting to observe from this one case with what ease such a hypothesis can be formed. It is difficult to understand with what right the canal *e* is called "entoderm." It is in fact only a depression of the squamous epithelium of the surface with a change into ciliated epithelium, as has been shown in Figs. 70, 71, 95 (*d*), etc. This ciliated epithelium is of ectodermal origin and is found in many of the cysts, and is normally present in the Wolffian

body, in the Fallopian tube and in the uterus, in the nose, etc.—all areas derived from ectoderm. That in the glia tissue (f) a canal lined with cylindrical epithelium is present is very natural, for these glandular structures, found in all parts of the dermoid prominences, are nothing but ectodermal products, as is also the glia tissue. It is certainly taking much for granted to consider the piece of bone *e* a cranial bone, and to consider as the development of an embryom what in reality is only a mixed tumor resulting from displaced cells.

Wilms says that "trachea has been described by Baumgarten, nose by Böttlin, intestine by Perls, Neumann, and Baumgarten, structures resembling the eye by Baumgarten, mamma by Velits, extremities by Klausner, central nervous system by Friedreich, ribs and pelvic bones by Küster," etc. If we compare these various descriptions with Fig. 22 and with the microscopical description of the cases of Breslau, Beck, Weigert, Marchand, Kümmel, etc., we find in all of them the same structures, absolutely alike in every way. Since the dermoid cysts of the ovary result from displaced cells, it should be expected that in these and other dermoid cysts ectodermal and mesodermal cells should form the same structures. Entodermal products are nowhere present in our specimens. In the quoted cases of dermoid cysts in other parts of the body errors have been made in the macroscopical determination of the tissues present and also in the microscopical value attached thereto. In the above-mentioned cases exactly the same errors in the description of the same tissues may be observed.¹

Wilms found a dermoid cyst in the ligamentum latum which had nothing to do with the ovary. "With the inversion dermoids formed in the development of the Wolffian duct this cyst has nothing to do, for it is no pure cutis cyst. The question to be answered is, Where does this tumor originate?" Since Wilms considers it possible that the Wolffian duct is in a position to carry ectoderm cells into the ligamentum latum and to cause pure cutis cysts, and yet because this cyst contains more than ectodermal structures, and, for him at least, only an ovum can cause a cyst containing products of three germinal layers, he finds it necessary in this case to discover ovarian tissue. Although he grants that the case of Marchand (behind the kidney) is caused by the Wolffian duct and the cells displaced by it (and this tumor is certainly more

¹ See Archiv. für Gynäkologie, Bd. lxi.

than a cutis cyst), and although he explains the mixed tumors of the cervix and the vagina as caused by a displacement of mesoderm cells by the Wolffian duct, he seems to overlook the possibility of a displacement of ectoderm and mesoderm cells into the hilus of the ovary. He says concerning this case: "The microscopical examination of the apparently connective-tissue prominence in the cyst wall gave surprising results. In this prominence was found within a very cellular stroma a series of small corpora fibrosa *corresponding entirely to those of the ovary*. Primitive ova were not present. With this explanation—namely, that this tumor developed from a third ovary—the danger which seemed to threaten my work was overcome. I leave untouched, since it is not a part of my work, the question as to how this third ovary, without any connection with the other, came into the anterior side of the ligamentum latum, and especially in connection with the ligamentum rotundum." The presence of a "third ovary," although rare, cannot be denied in certain cases. In this case, however, without seeing an illustration of the ovarian tissue in the wall of this cyst with its "corpora fibrosa" corresponding to those of the ovary, the presence of a third ovary cannot be granted.

Wilms finds it necessary naturally, in explaining such cases, to always think of ovarian tissue. He says: "The already mentioned possibility of a displacement of epidermoid tissues in the formation of the Wolffian duct I have already considered to be inappropriate in the case of dermoid cysts of the ovary. I must mention that I was not able, on such a theory, to explain most of the cysts of the ovary. It is evident that, in the development of the Wolffian duct, only cells from the dorsal side of the embryo could be displaced, and that, therefore, only pure cutis cysts could result [?]. Then it would remain as inexplicable as before where teeth, eyes, and the various other tissues in these cysts could originate. A displacement from those portions of the body in which these prevailing tissues of dermoid cysts normally occur—*i.e.*, the head and neck—has also been brought into consideration with the necessary reserve." That Wilms comes to these conclusions from erroneous premises may be seen from the following facts: 1. The pronephros and the Wolffian body originate at a point which corresponds to the subsequent situation of the kidney and the heart. 2. It is beyond question that the Wolffian duct and the Wolffian body can displace mesodermal

as well as ectodermal cells. 3. We find in dermoid cysts of the ovary only ectoderm and mesoderm products. *Entoderm is never present.* 4. Teeth are found in dermoids in so many parts of the body that their presence is no evidence of the existence of cephalic structures, and they have no specific significance. 5. The so-called "eye structures" have nothing to do with a real eye formation. 6. Glia tissue is only an ectodermal product, and is, therefore, no evidence of the presence of cephalic tissues.

In one case Wilms describes the following:

"In the connective tissue of the gland near the brain are seen black, very fine pigment masses arranged in a series and forming a union of the brain with a large space within the gland. This space is filled with a congealed substance and is lined by a dark, granular, cubical epithelium which is quite different from the epithelium of the other glands. In its lumen are two nodules with a thin pedicle, of which the one shows dark, granulated, epithelial cells, while the other is thickly covered with a fine black pigment. From the first these masses remind one of the pigment layer of the retina, and I believe, although under the abnormal conditions of growth nothing further resulted which resembles an eye-formation. *that I am justified in calling both nodules rudimentary eye formations.*"

In another case Wilms says:

"These thick bundles of nerve fibres run toward the dark spot evident in the drawing, and then divide in various directions. This dark spot, which lies directly on the brain, consists microscopically of brown-black pigment, as is found in the retina. The same pigment lies also within the brain and in the neighborhood of the dark spot. *Although I was unable to find any other structures which could belong to the retina,* I believe that this pigment deposit must be brought into relation with an attempt at forming an eye."

I believe that this description, as well as the case of Baumgarten, wherein not alone one, but numerous cysts lined with pigment epithelium were present, as well as the fact that Rippmann described the pigment epithelium of the eye in a tumor in the cranium, and the fact that Kümmel in his case also found pigment cells, excludes the possibility of attaching any specific value to these structures and that they are no evidence of the presence of cephalic tissues.

7. The predominating tissues, although the displaced cells come from the upper part of the body as a result of the situa-

tion of the Wolffian body, have nothing to do with the normal tissues of the head and neck. 8. Exactly the same tissues, exactly the same glandular structures, have been described in the various dermoids in the other parts of the body—cases beyond doubt due to displaced cells. 9. Mesodermal tumors without ectoderm also occur in the ovary. Reis described an enchondroma ovarii in which were present hyaline cartilage, bone, and a series of cysts which were not closely described. Wilms says: "I consider the name 'chondrom' the best for such cartilaginous tumors which occur in different organs, and which *have nothing in common with our complicated tumors.*" Wilms, in the case of the testicle, is quite willing to classify such tumors as teratomata. This tumor of Reis has, however, something in common with dermoid cysts, in so far as both have originated from displaced cells. The difference is that in the former no ectoderm cells were removed.

Wilms says:

"The view that all complicated tumors of the ovary must be congenital seems, in my opinion, to be incorrect. We know that the dermoid cysts of the ovary are rarely found in their beginning stages. Further, we can observe that the growth of the cysts is a very rapid one, when once the stimulus thereto has been given, so that usually within a year after the beginning of the first symptoms operation is necessary. We must therefore believe that in those 70-year-old patients the development of the malformation began one or two years, or at least only a few years, before. Where, however, the germ therefor rested until then, concerning this we can furnish no proof nor form any opinion. If we accept, as is generally done, a long-slumbering formation, which through some unknown irritation is stimulated to growth, it only makes the relations more complicated and still more inexplicable. Why in one case such an irritation and such a growth should develop in a child and in another case at the senile period remains as dark as before."

Since Wilms does not consider all the dermoid cysts to be congenital, he sometimes finds an explanation for the presence of teeth difficult, and accepts for this the following interesting hypothesis: "If the dermoid cysts are considered as rudimentary embryos, we should expect in them milk teeth corresponding to the normal. Since, however, the statements concerning milk teeth in dermoid cysts are very rare and uncertain, we are forced to adopt the theory of a *certain dependence, as regards the development of organs within the*

dermoid cyst, upon the age of the mother. We must believe that, under the influence of a common circulation of the maternal and fetal organisms, tissues like the teeth follow in their development the form and structure of those of the mother."

We are therefore, according to Wilms, compelled to believe that an ovum develops without fecundation, but is so influenced by the maternal organism during its development that in a tumor which, according to Wilms, may be only one or two years old, second teeth are formed because the mother has second teeth. It is not to be questioned that the occurrence of second teeth certainly speaks for our theory as to the origin of the dermoid cysts of the ovary. Such an explanation as the above one given by Wilms is certainly a startling innovation. To my mind it is an indirect proof of the fact that the cells which form these second teeth are independent structures and certainly as old as the other cells in the body of the patient.

Wilms stands opposed to our pathological views in discussing the carcinomatous degeneration of dermoid cysts. He found in the literature eight cases in which it was positively proven that the cutis of the dermoid cyst itself was the seat of origin of the carcinoma. To these eight cases is added a ninth of Wilms. He says:

"In recalling the meaning of such observations for the theory of Cohnheim I would mention the following. At the present time we may consider as an active factor in the origin of carcinomata the condition wherein the foreign substances within the dermoid cysts exert a constant irritation which leads to growth of the cutis. We have recognized the dermoid cyst as an embryonal malformation which grows so rapidly that already within a year or two after it has caused symptoms it must be removed from the body. We have before us, then, the peculiar fact that in an organism one or two years old the development of a carcinoma takes place. This process, *which directly opposes our present views concerning carcinoma and its development*, compels us to believe in a certain dependence of the ovarian malformation upon the maternal organism."

I agree with Wilms as regards this dependence, but this dependence dates back to the embryonal period of the carrier of the dermoid cyst; and since this cyst is the end result of displaced cells, these cells and their products are subject to the same changes as the normally-situated tissues, and if they undergo carcinomatous degeneration then these displaced cells and their products follow the law of Cohnheim.

As regards the so-called "brain tissue," Wilms finds that it occurs in varying amounts in the various cysts.

"Its encapsulation in connective tissue and a very elastic capsule is the usual form. From this capsule there enter into the substance of the brain septa with blood vessels which imitate the formation of gyri and sulci. *A differentiation into gray and white matter or the presence of central ganglia is in nowise fully evident*; only occasionally do we recognize in a cellular zone which runs parallel to the surface of the brain *an attempt at a division into cortex and medullary substance* [?]. I have already called attention to the fact that *only remnants of the nervous elements are present*, while, on the other hand, *glia tissue is very well developed*."

It is naturally impossible to attach any specific value to such conditions or to say that cephalic tissues are present. Such a statement loses its value, for, practically speaking, only glia tissue is present, and this in the dermoid prominence is only a product of the ectoderm, just as is the cutis. The statement that this tissue represents the brain of an embryo is quite as voluntary as the statement that the cutis *a*, Fig. 105, is the scalp, for in all dermoid cysts, in whatever part of the body they may be found, the same skin-like areas covered with long hairs have been found.

"As regards the formation of the digestive tract," says Wilms, "the simplest evidences are furnished by cysts and ducts *which are lined with cylindrical cells*. At times the latter are furnished with a basal membrane, and between them are found typical intestinal beaker cells. Aside from the few cases in the literature, such areas have been found in four of my cases. The resemblance of such cell formations and of the entire picture to the intestinal mucous membrane is made still stronger through the presence of lymph follicles and powerful layers of smooth-muscle fibres. Further products of the intestinal tract, *especially the large glands of the abdominal cavity*, I have never observed."

Since Wilms so easily adopts these glandular structures as intestine because they are surrounded by muscle fibres, it is interesting to observe what he says concerning striated muscle: "In contrast to the frequent occurrence of smooth-muscle fibres is *the absence of striated muscle*. I have found striated fibres in none of my specimens, in spite of the closest examination. The only authors who mention striated muscle in dermoid cysts are Marchand and Velits. I am not able to

give any definite reason for this absence. It is only a pure hypothesis on my part when I say that perhaps *the inability to exercise movement may cause this poor development of striations in the malformation* (!!).

Since Wilms finds in two cases hair within the brain, he is compelled "with Hildebrandt to show that it is simply a perforation of hair through the organs of the malformation. That a development of these hairs occurred in the brain itself is not to be thought of" (?). Since we have found in our specimens hair in various parts of the prominence and likewise hair follicles, this fact speaks against the regular arrangement which Wilms always expects, but which, however, was not found in all his cases. Concerning one case he says: "We realize that the development of intestine usually occurs toward the lumen of the cyst, yet here a dorsal and ventral surface cannot be distinguished. The difficulty is to explain why the skin, *which is beyond doubt scalp*, is not situated dorsal to the brain instead of near the entoderm. I cannot discuss the various mechanical disturbances of growth which may have taken part in forming this displacement."

Wilms considers the dermoid malformation to be "a decided parasite, which as such uses the maternal organism to regulate its own circulation and nutrition and to excrete and do away with its own injurious products. Probably the absence of certain organs of the malformation stands in relation to its parasitical nature. Since its circulation and nutrition and the excretion of the used-up products is accomplished by the mother, this probably explains *the regular absence of certain organs, such as the kidney, the liver, etc.*"

Finally Wilms says:

"In addition to the disturbance in growth due to the small amount of space within the ovary, and in addition to *the parasitical nature of the fetus*, there appeared to me in the beginning of my examinations still a third factor of influence upon the development of the embryo—namely, *the one-sidedness of the formation*. In this connection I refer to one of my observations in which the right os petrosum and the right upper maxilla were very fully formed, while no evidence of *such bones of the left side was present*. Further, there was present in another case only one well-formed brain hemisphere and only one eye formation. Such conditions, *of which I could mention quite a series*, brought me to the idea that the dermoid malformation *was only a one-sided fetus*. Against this speaks a number of observations in the literature, among which I mention only the statement concerning two eyes [?]

by Baumgarten and the frequently-quoted case of two anterior extremities. Therefore, the one-sidedness of the dermoid malformations cannot be extended to all cases, yet *it is so prominent in some cases* that one tries to find in the formation itself the cause for this hemi-development. At any rate, I will gladly grant that this fact may be due to a disturbance of growth through lack of room [1]. In individual cases this can be decided only with difficulty."

My criticisms, that the reported so-called "extremities" occur only singly and that the teeth which are found prove to be of one side, are not disproved by the observations of Baumgarten, for in his case there is absolutely no reason to discuss an eye formation, for there were present simply numerous cysts lined with a pigmented epithelium. In conclusion I will compare my deductions with those of Wilms.

Deductions of Wilms.

1. "The dermoid cysts of the head and the thorax and a portion of the cysts in the retroperitoneal and retrorectal tissue originate through cell displacement in inversions of gland formations or in the union of fetal folds."

2. "A portion of the teratomata at the base of the cranium and in the abdominal cavity are to be considered as double formations, and are to be compared to the inclusions fetus in fetu."

3. "With the exception of those originating in the ovaries, all dermoid cysts are either cutis cysts or contain tissues which occur in their immediate neighborhood."

4. "From these other dermoid cysts the dermoids of the ovary, because of their form and origin, are to be sharply distinguished."

5. "The dermoid cysts of the ovary all develop from a three-

My deductions.

I have shown that in the development of the retroperitoneal dermoid cysts and the retrorectal tumors the Wolffian body, the Wolffian duct, and the caudal intestine play the important rôle.

The teratomata at the base of the cranium originate from cell displacement in the formation of the hypophysis duct. The teratomata or dermoid cysts of the abdominal cavity are not double formations, but can likewise be explained as resulting from a displacement of cells.

The other dermoid cysts are not pure cutis cysts, but often present just as numerous tissues and just as complicated formations as the dermoid cysts of the ovary.

According to form and structure there is little difference between these other dermoid cysts and those of the ovary, as is proven in Figs. 21 and 22. As regards origin, there is no difference, for all originate from displaced cells.

The dermoid cysts of the ovary contain the products of ectoderm

layered germinal formation, which attempts to grow in a manner corresponding to the development of a human fetus. In its arrangement and in the position of its organs the resemblance to such a fetus can always be recognized."

6. "As a result of the disturbances of development due to mechanical pressure, the tissues and portions first differentiated come to more complete development and destroy the other tissues. Thereby results the prevalence of ectoderm and of the tissues of the head."

7. "In the development of certain organs, in addition to the quoted law of early differentiation, the varying growth energy of the cells seems to be of importance."

8. "So far as mechanical disturbances do not inhibit, the malformation develops, as regards the structure and form of the individual tissues and organs, in a manner corresponding to the normal course."

9. "The circulation of the blood in the ovarian parasites is regulated by the maternal organism. Yet the malformation itself furnishes a vessel system and is concerned, under certain conditions, in the distribution of blood."

10. Since not alone the circulation, but also the nutrition and excretion of used-up products, is regulated by the mother, this explains *the constant absence of certain organs, such as liver and kidney.*"

and mesoderm. *Entoderm products are never present.* The arrangement and position of the so-called "organs" bears no resemblance to those present in the normal development of a human embryo. That a prominence one-half centimetre in diameter should resemble the formation of a fetus, and that therein cranial bones, brain, oral cavity, teeth, etc., should be found in typical arrangement, would be a condition which represents a developed human fetus in miniature—i e., embryological size with tissues of the adult.

The tissues of the head, as such, are nowhere present. If the tissues which are first differentiated were the ones always present, we should find in every parthenogenetic case placenta, chorionic villi, umbilical cord, etc. The absence of these tissues disproves the theory of Wilms.

There is no early differentiation. Teeth have no specific meaning, since they occur in dermoid cysts in all parts of the body.

There are found in dermoid cysts of the ovary no tissues which can be considered as real human internal organs.

As regards its circulation, the connection of a dermoid cyst as a tumor is the same as in the case of any mixed tumor.

A dermoid cyst of the ovary is no more able to form a liver and a kidney than dermoid cysts in other parts of the body. It needs for the excretion of used-up products a liver and a kidney just as little

11. "The dermoid malformations of the ovary are therefore to be considered as parasitical fetus which, as such, can be characterized as an independent group by the name 'rudimentary ovarian parasites.'"

as any other dermoid cyst or as a fibroma or a chondroma.

The dermoid cysts of the ovary differ from others only through their more complicated structure and through the more frequent occurrence of the dermoid prominence. They have absolutely nothing in common with a fetus, form no independent group, and are only to be divided into cystic and solid dermoids.

The dermoids of the testicle are distinguished from those of the ovary in that the ectoderm is less prominent, but aside from this they show so distinctly the character of mixed tumors that this cannot be doubted. And the reason for this difference we have already discussed, though a positive statement is naturally difficult. That the dermoid cysts of the ovary occur congenitally as well as in childhood, that they are often bilateral and often combined with a cystadenoma in the same or in the other ovary, and, further, the fact that they contain only ectoderm and mesoderm products and may occur in the ligamentum latum without involvement of the ovary, are all conditions which can only be explained on the theory of the displacement of cells; therefore they are nothing but mixed tumors, and because of the presence of skin and hair are called "dermoid."

In dermoid cysts of the ovary we have a cyst filled with cheesy matter and hair whose wall, as a rule, shows a prominence at one point. The base of this prominence is formed by ovarian tissue, and this area, even if the thickness of the prominence be not added, is much greater in thickness than the rest of the cyst wall. The prominence is covered with squamous epithelium often evidencing depressions. The nearer the squamous epithelium approaches the base of the prominence, the greater is the tendency of the squamous epithelium to change into cylindrical epithelium, ciliated epithelium, or epithelium with beaker cells. Beyond the base these various forms of epithelia pass over into a form of granulation tissue which lines the rest of the cyst wall. Often this tissue consists of large cells with numerous nuclei, and by direct examination it may be seen to go over into squamous epithelium or to lie immediately beneath squamous epithelium. This tissue shows various transition forms, so that at times it represents

an acinous glandular tissue in its earlier stage, from which later glandular formations develop. The same areas are found in the dermoid prominence itself.

Directly under the squamous epithelium of the prominence lie numerous sweat glands, sebaceous glands, etc. In the prominence are found muscle fibres and muscle bundles, which latter are frequently grouped about growing cysts. Bone and cartilage are present in plenty, and the former show microscopically the structure of a tooth in numerous cases. Fat tissue, connective tissue, myxomatous tissue furnish the other elements of the prominence.

As regards glandular structures we have various forms: Glands, in all stages of development, which are really like salivary glands and occur in scattered groups. They may form a large mass whose excretory duct opens upon the surface. Other glandular structures are lined with a high cylindrical epithelium, with a nucleus at the base, contain numerous beaker cells, and frequently are arranged so that they resemble the glands of the stomach or intestine or the crypts of Lieberkühn. These are simply more complicated forms of those already mentioned. Other glandular structures, especially those containing beaker cells, have as contents a reticular tissue in which lie large round or spindle-shaped cells with very large nuclei, a form of myxomatous tissue. The other structures furnish cysts lined with a stratified cylindrical epithelium, others show papillary excrescences, and still others are lined with stratified ciliated epithelium. That all these glandular structures and cysts are of common origin is proven by the fact that from all of them develop structures which without doubt may be classified as very much like salivary glands. The probable course of origin of these various structures are the tubules of the Wolffian body, for the various forms of ovarian cysts show the same structure.

The already mentioned depressions of the surface squamous epithelium show almost the same forms of epithelium, *i.e.*, squamous epithelium goes over to cylindrical and then into the so-called "excrescences," then into ciliated epithelium, into cylindrical epithelium with beaker cells, and again into ciliated epithelium; etc., in all possible variations.

In the prominence are frequently found large areas of a connective-tissue substance containing numerous small round nuclei. In this tissue, as in other tissues, may be found glandular structures lined with cylindrical epithelium. Wilms

calls this tissue "glia" because corpora amylacea are present, although it does not take on the stain of Weigert. As a matter of fact, we can only say that we are dealing with a round-celled embryonal tissue which resembles glia tissue, and it is always found directly under the surface epithelium of the prominence or directly under the sebaceous glands. Specific nerve elements are not found.

In the prominences pigment is a frequent occurrence. 1. The hairs contain numerous pigment granules. 2. Pigment may lie scattered everywhere as dark spots. 3. The previously mentioned acinous glandular tissue is often richly pigmented. 4. The spinal ganglia may contain pigment cells. 5. Cysts lined with a pigmented epithelium have also been described. 6. The cells of these various combinations may lie so close together that they take on a polyhedral shape showing no intercellular substance. This pigmentation is characteristic of ectodermal products.

In Fig. 79 it is seen that the ciliated epithelium at the base of the prominence stands in relation to glandular structures. So soon as they are filled with a secretion the epithelium becomes flattened. Here are also cysts which are lined with a high epithelium. These often show excrescences covered with epithelium, so that there is a relation between these structures in the ovarian tissue and others situated in the dermoid prominence. As a matter of fact, almost all the dermoid prominences show such glandular formations in the ovarian base also. The base of the prominence is naturally formed of ovarian tissue only in those dermoid cysts which occur in the ovary, and not in such as occur in the ligament. The prominence is well developed when the bone pieces take on a strong growth and project beyond the surface. These bone pieces may take on the most varying irregular forms, and often contain teeth. The entire structure of the tumor furnishes a complex histological picture of the various products which are furnished by ectoderm and mesoderm. *In these tumors all the glandular structures are of ectodermal origin.* The various tissues have no regular arrangement and represent only tissues, for in no case is an organ present. If the tissue which Wilms calls "glia tissue" is to be viewed as such, it must be considered just as squamous epithelium, etc., only as a product of ectoderm. The same formations are found in dermoids in other parts of the body, but the development of the genitalia being a complex process, and the cells which are displaced being removed at a very early period and growing

in the pelvis without obstruction, we find in the dermoid cysts of the ovary, as a rule, a very complicated structure. It is not to be doubted that they develop through the action of the Wolffian body and the Wolffian duct, as do the larger number of cysts of the ovary and ligamentum latum. In this way the dermoids in all parts of the body are the result of displaced cells, which seems more probable than two entirely different explanations for tumors of the same structure but occurring in different parts of the body. It is to be hoped that through further investigations our theory as to the origin of dermoid cysts may find support.

I express my sincere thanks to Prof. Spee, of Kiel, for permission to illustrate his specimens, as well as for his kind assistance. To my honored friend and teacher, Dr. Abel, of Berlin, I express my deepest gratitude for his help at all times, as well as for the use of his material and his encouragement in my work.

127 EAST SIXTY-FIRST STREET.

AN IMPROVED SIMS SPECULUM.

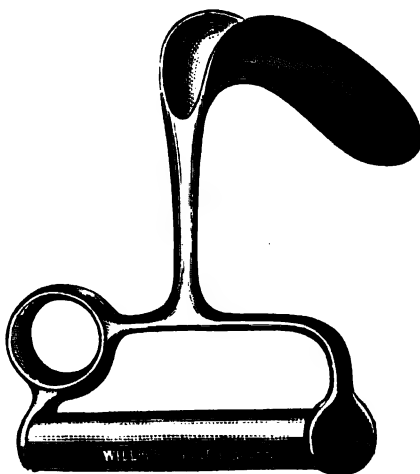
BY

B. CURTIS MILLER, M.D.,

Surgeon to Western Maryland Hospital, Cumberland, Md.

(With illustration)

I HAVE often been impressed with the fact that it is ex-



tremely difficult to hold the Sims speculum in position during

an operation, especially when the operation requires considerable time. Realizing how hard it is upon the assistant, owing to the unnatural position of the hand and arm, which become tired, cramped, and almost paralyzed, I have devised a handle, as shown in the accompanying cut, by means of which an assistant can hold the speculum in place for hours with little or no inconvenience. They are made in two sizes, large and small, by the Charles Willms Surgical Instrument Co., of Baltimore, Md.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Stated Meeting, March 12, 1901.

The President, H. J. BOLDT, M.D., in the Chair.

SARCOMA OF THE OVARY.

DR. BACHE EMMET.—The specimen which I present is of interest because of its character and size, that of a football. It was removed two weeks ago from a married woman 49 years old, multipara, menopause six years ago. One brother had cancer in the abdomen, one sister has a tumor of the lower abdomen. This specimen is a round-celled sarcoma of the left ovary. Dr. Freeborn, pathologist, states it "has grown within the last three or four years, was attached by its own ligament alone, had a few thread-like adhesions, small amount of ascitic fluid." Such a tumor is certainly not very common, and it is rather unusual to have one of this character grow to such a size without having established firm adhesions and given rise to much more derangement of the general health than was present in this case. The woman has not suffered and is in excellent general condition.

In a recent study of malignant tumors of the ovary made by Drs. Estor and Puech, of Montpellier, France, they collected all reported cases of the past thirty years. They found 372, 15 only reported in this country. Of this total number quite a large proportion gave evidence of a return of the malignant growth within from three to four years, so I must naturally feel concern about the future of this patient. Yet she has made an excellent recovery, and I feel warranted in encouraging her to feel no apprehension, inasmuch as the growth was essentially local and had an exceedingly small attachment.

ECTOPIC GESTATION.

DR. E. H. GRANDIN.—This specimen was removed from a woman 23 years old, who has had two children, the last two years ago. She menstruated every four weeks, the flow last-

ing from seven to ten days. Her last menstruation began on February 15, 1901, and lasted twelve days. On March 1 she again began to flow, and continued. There were no colicky pains or data to suggest pregnancy. There was a mass behind and to the left of the uterus. Under the influence of ether the uterus was curetted. There was no enlargement of the uterus. Post-vaginal section gave exit to fluid blood and clots. Abdominal section was made for the removal of the ruptured left tube. There was about one quart of clots and blood in the peritoneal cavity.

DR. JOSEPH BRETTEAUER.—I should like to ask the details of the microscopical examination. What kind of tumor was it?

DR. B. MCE. EMMET.—Small-celled sarcoma.

DR. BRETTEAUER.—I ask because a few years ago I saw a case at a time when the patient was suffering from pelvic peritonitis. After ten days or two weeks the inflammatory symptoms subsided and a distinct tumor could be felt, which upon operation was proved to be ovarian, about one-half the size of the one presented here. The surface of the tumor was slightly adherent to the omentum and gut, but the adhesions could be easily loosened, and the tumor was removed without much difficulty. The section of the tumor showed a most peculiar macroscopical picture. The whole surface of the tumor, down about one-half an inch in depth, was brownish-red, while the centre corresponded to what is usual in ovarian tumors of that character and was white and shiny. Microscopical examination showed that infarction had taken place in the whole surface of the tumor, which was a round-celled sarcoma. But that was not the most important feature in that case. Already at the time of operation the patient complained of a hacking cough. Having seen one or two similar cases, I was rather sceptical about it and made a very bad prognosis, saying that there were probably metastases in other organs. The patient recovered from the operation, but died about three months later, apparently from the pressure of a large metastatic growth within the chest.

DR. B. MCE. EMMET.—I should like to have Dr. Boldt, Dr. Coe, and Dr. Vineberg report upon the cases that I mentioned as collected in the paper upon this subject to which I have referred. It would be interesting to know if they have observed a return of the disease in those cases and at what period after the operation.

DR. H. J. BOLDT.—One of the patients referred to died in a short time. A second patient had recurrence in the abdominal wall, and was operated upon by me about one year later.

DR. H. N. VINEBERG.—I recall at present only two cases of spindle-celled sarcoma that were operated upon by me, one two years ago, the other three years ago. Both patients so far are in good health. I operated upon a case last summer which the pathologist diagnosed as round-celled sarcoma of the ovary. It is over nine months now since the operation, and the woman as yet has had no recurrence.

DR. RALPH WALDO.—The patient just referred to by Dr. Boldt was alive two years after and without any recurrences. A little over seven years ago I removed a sarcoma of the ovary at the Post-Graduate Hospital; it was about the size of a fist and not adherent. This last year the patient was seen and her abdomen opened; the growth had returned so extensively that it was impossible to remove it. A few adhesions were divided, the abdomen closed, and she returned to her home very much benefited.

RESECTION OF THE INTESTINE.

DR. B. H. WELLS.—Mrs. A., 39 years old, noticed a small swelling in her abdomen one year ago, since which time it has increased in size, and the patient has had progressive emaciation and diminution of strength. For one week previous to February 14 she had suffered from continuous vomiting. There was at this time a slightly nodular movable tumor, the size of an orange, occupying the lower right-hand quadrant of the abdomen. Operation was considered to be advisable on account of the persistent vomiting, so, on the 16th, the abdomen was opened and the tumor, a carcinoma of the cecum near the ileo-cecal valve, was removed, together with nine inches of large and small intestines, glands, and mesentery. After the operation there was no vomiting, whereas before the operation the patient vomited everything that was introduced into the stomach. When the patient was taken off the operating table the pulse was 120; the next day it dropped to 94, since which time it has remained normal. When the patient entered the hospital her temperature was 100°; the second day after the operation it was 101.8°; then it fell to 99° and remained normal after the fifth day. The after-treatment was by hot normal saline solution, one pint being given by rectum every four hours, and one-fortieth of a grain of strychnia hypodermatically every four hours. As there was no vomiting, no nausea, and no distension, she was allowed, after the first day, one to two ounces of beef juice every two or three hours. On the 18th she expelled gas and a little fecal matter. On the morning of the 19th she had a movement of over a quart of fecal matter, and, later in the day, twenty ounces more. Since that time there have been daily movements of the bowels.

The resection of the cecum and small intestine was done with the aid of O'Hara's forceps so easily and so quickly, and the after-results were so pleasing, that I wished to present the forceps to the attention of the Society. They consist of two pairs of straight forceps, made light but strong. The forceps are placed vertically on the intestine at a point where we wish to make the section, carrying the tip exactly down to the mesenteric border; a second pair is placed in the same manner at the second point of section; the gut is divided close to either forceps and removed. The forceps are brought together and held by a small clamp. This holds the intestinal ends in appo-

sition, so that the suturing can be done accurately, easily, and quickly. Little handling of the gut is necessary, and there need be no contamination of peritoneal surfaces by the fecal contents. The method employed with these forceps represents a distinct advance in the technique in resection of the intestine. I have used the Murphy button and other methods, but I consider this to be, if not the quickest, the safest and simplest.

DR. RALPH WALDO.—I should like to ask Dr. Wells if an end-to-end anastomosis was made between the large and small intestines.

DR. B. H. WELLS.—Yes.

DR. B. MCE. EMMET.—A year ago I had a case similar to that of Dr. Wells. The operation enabled the woman to live from December, 1899, to December, 1900, in comparative comfort. I am uncertain how near the cecum the growth was. I removed the carcinomatous mass and did an anastomosis, but by a different method than the one employed by Dr. Wells. Nearly all cases operated upon by circular stitching have a constriction following, and I think the best chance is given them if we employ Maunsell's method. The points of this method are: Cutting out the section of gut with the necessary mesentery, in "V" shape, then passing sutures through the entire thickness of the gut, one which will unite the two ends of gut on its free side, the other on its attached side and including the borders of the mesentery. These sutures, being left long, are both drawn through a long slit which one makes upon the free face of the gut; drawing both ends of gut to the surface, suturing of the free borders by through-and-through stitches for the whole extent of the lumen. One then cuts these sutures in the middle, tying each half to include two borders. When this is all secure, one reinverts the bowel and closes the temporary slit by Lembert sutures. Maunsell has been dead five years, and only eleven operations of that kind had been performed up to that time. My case lived for one year, and even then there was no constriction at the point of operation. She died of development of the disease in other parts of the abdomen.

DR. B. H. WELLS.—With these forceps lateral anastomosis can be done as easily as end-to-end.

DR. GEORGE GRAY WARD, JR., read a paper on

THE PREVENTION OF POST-OPERATIVE ADHESIONS
OF THE PERITONEUM.¹

DR. B. MCE. EMMET.—When I review my own methods I find that there are but few things in which I do not agree with Dr. Ward. Water I believe in so firmly that where there is so much exposure or abrasion of the surface, making me fear a pseudo-ileus or adhesion, I throw in water almost invariably. I do not use it if I am simply opening the abdominal cavity to

¹ See original article. p. 753.

make an attachment of the uterus to the abdominal wall; but if adhesions are broken up where they are so firm that I am likely to break vessels, or if there is anything that suggests disease of tubes being present, I throw in water as a precaution. As regards the prevention of adhesions by other means, I use aristol, as suggested by Dr. Morris; I think it will protect the surface by glazing it over. I must take exception to moving the patient early after the operation. I do not believe that one can dislodge gases until the bowel, which is partially paralyzed, has regained its peristaltic tone; then it is time to use cathartics or enemata. I believe that the early moving of the patient from side to side makes her restless and uncomfortable.

DR. MALCOLM MCLEAN.—I have long dwelt upon the importance of moisture in the operating room and the necessity of having a high temperature there. I never operate in a room where the temperature is below 85°, and usually have it in the neighborhood of 90° and with plenty of moisture in the air.

In regard to the application of heat to a stump or other raw surface that cannot be covered by peritoneum, I never hesitate to use the cautery, but never beyond the degree of whitening or coagulating the tissues; I *do not* try to *char* it, but merely to cook it. Following that I have never seen adhesions form, and generally the tissues thus changed by heat are absorbed or "digested" by the peritoneum.

DR. J. RIDDLE GOFFE.—In regard to the frequent change of the position of the patient in bed, the plan I have used for a considerable time consists in placing her upon her side as soon after recovery from the anesthetic as she feels any discomfort, then changing her to the other side; the guide to the number of changes is the feeling of discomfort experienced by the patient. I think this is instrumental in preventing adhesions. I was interested in what Dr. Coe said in regard to the absence of adhesions in bad cases requiring gauze drainage; the reader of the paper did not mention that device. I believe that iodoform gauze packed in the pelvis and protruding through the vagina is an important method of preventing adhesions, and that is undoubtedly the reason why the patients Dr. Coe refers to were enabled to go out of the hospital in such good condition. The rationale of its action consists in the fact that the gauze stimulates a tremendous outpour of serum, separating and lubricating surfaces, thus accomplishing the same object as is obtained by filling the abdomen with salt solution. I believe in opening the bowels early. Still, I am not as persistent as I formerly was, and, if there are indications that the patient should not be disturbed, I am willing to wait three, four, or five days before pushing active measures in that direction other than saline enemata.

DR. RALPH WALDO.—I believe in the hot saline solution, and I use it where the patient is markedly depressed or where I wish to use a stimulant. I think it was the late Dr. C. C. Læe who laid immense stress upon the importance of keeping

the intestines from exposure. He never allowed the abdomen to remain open without keeping a moist pad over the cavity. I am convinced that the rational use of cathartics is proper, but, on the other hand, am convinced that patients are many times depressed by the operations, and if the cathartics are used too extensively the depression that the patient receives is out of proportion to the benefit derived from early peristaltic action. The *personnel* of the individual helps us a good deal. We may suture the abdominal wound and have primary union and no harm. The next case may result in primary union and yet a keloid condition result. I think the formation of scar tissue takes place within the abdominal cavity in certain cases and not in others. The personal element may cause a scar that no pathologist can account for to his or our satisfaction.

DR. JOSEPH E. JANVRIN.—My own experience of late years (and by that I mean what has been brought to my attention more particularly by my own work) has led me to this conclusion, that we should protect raw surfaces as well as possible with peritoneum, and if any raw surface is left that cannot be covered with peritoneum it should be touched with pure carbolic acid. That forms a nice coagulum, grafts over the end of the stump or other parts, and, I believe, thoroughly protects the parts from adhesions at those points. I use as small an opening as possible in the abdominal wall, and am as gentle as possible in handling the intestines. In addition I always protect them by warm cloths. If they are brought outside at all I always protect them with cloths wrung out of hot saline solution. I have used this for more than twenty-five years for washing out the abdominal cavity after serious operations. Normal saline solution was first described by the late Dr. E. R. Peaslee in his work on "Ovariectomy" (published in 1872) as "artificial serum," where it is advised to use one drachm of common table salt to a pint of hot water. Dr. Peaslee used this fifty years ago simply to wash out the abdominal cavity in cases of infection following ovariectomy, where it was necessary to make use of a thoroughly non-irritating wash for this purpose. In many instances I have made use of large quantities of the "artificial serum" for days by means of a large male catheter, sometimes making drainage down through to the cul-de-sac. I have been in the habit, in all cases where I know the parts have been somewhat injured and a raw surface remains uncovered by peritoneum, to flush out the abdominal cavity thoroughly, and thus leave in the cavity a supply of saline solution, frequently as much as two quarts. That is one of the best preventives for obviating adhesions. Early movement of the bowels by cathartics after operation is, I think, somewhat questionable. I do not now rely upon it as I used to. If there is difficulty in moving them, or if there is much distension, I use high enemata and seldom fail to bring about an efficient action in that way. Frequently in cases where I have found serious trouble and was afraid I would lose my patient, where the enemata

had been passed without result, I have gone back to the old method of using small doses of morphine, which quiets the nervous irritation and pains; and keeping the patient under the influence of small doses of morphine for twenty-four or forty-eight hours in many cases will result in an excellent movement of the bowels, followed by no further trouble.

DR. JOSEPH BRETTAUER.—I am in accord with the remarks of the previous speaker, and it is gratifying to me to hear the remarks made in reference to the use of morphine. I well remember the time when some of our members thought it wise to start the bowels almost before the patient got to her bed, and the majority of operators believed in earliest catharsis. I believe it is impossible to prevent the formation of adhesions in any case by causing peristalsis. The moist treatment surely gives better results than the dry. During the past seven years I have operated during the summer months, often when the temperature has been 100° and above in the operating room, when those present have asked that the windows be opened; but I always insisted upon keeping them shut, and it may be simply chance that those who were operated upon during that time made a better and smoother recovery than those who were operated upon during the winter months, but this surely has been my experience each year. With the improved technique, leaving no raw surfaces, with no large silk ligatures or stumps in the abdominal cavity, a great deal has been done to prevent extensive adhesions. Since I have used moisture, taking care not to leave raw surfaces and no big stumps, I have not seen a case of post-operative intestinal obstruction for some years.

DR. G. G. WARD, JR.—My paper was written because I come across so many dispensary patients having been subjected to laparotomy who still complain of pain. Often the symptoms are supposed to be due to the artificial menopause when they should be attributed to adhesions, and the same symptoms are met with when there has been no castration. In regard to allowing the patient to move about in bed, I base my opinion upon the many cases I have seen in the practice of Dr. A. Palmer Dudley, with whom I have been associated for the past six years, and upon my own experience. I have never found any ill results from it, and I know it is infinitely more comfortable for the patient. The movements of the patient break up newly forming adhesions, and a change of position is often followed by discharge of gas. Dr. Goffe's remarks in regard to the use of the gauze drain as a preventive of adhesions are a surprise to me, as I am of the opinion that gauze is an etiological factor in their occurrence. If gauze be left in for any length of time it sets up an adhesive inflammation. As to the use of saline cathartics, I agree that they should not be used persistently in every case. Dr. Janvrin mentions the use of morphine after cathartics have failed. I have seen the same good effect in several cases. The morphine allows the intestines to rest and gives them a

chance to recover their tone. Frequently too much catharsis after operation depletes the strength of the patient, which has already been lowered by the ante-operative purging and the shock of the operation. I prefer to give a high and copious enema early in cases which have been subjected to severe operations, rather than to push the cathartics.

I do not wish this Society to think that I am of the opinion that rigid rules can be laid down in a paper of this sort for our guidance in every case. I am well aware that there may be many cases where exceptions to the methods advocated would be wise. I simply desire to lay down broad general principles as a guide to what is desirable.

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.

Stated Meeting, March 18, 1901.

The President, REUBEN PETERSON, M.D., in the Chair.

DR. A. GOLDSPOHN read a paper on

INTRAPELVIC INFRAVAGINAL PERINEORRHAPHY WITHOUT
LOSS OF TISSUE.¹

DR. THOMAS J. WATKINS.—I would like to ask the essayist if the tissues are united entirely from side to side.

DR. GOLDSPOHN.—I aim at direct union of the lateral surfaces without anything intervening.

DR. WATKINS.—Does the flap consist entirely of mucous membrane?

DR. GOLDSPOHN.—No, sir. I used the vaginal wall as a mucous membrane and muscle, not the subvaginal areolar tissue.

DR. WATKINS (resuming).—It would seem to me that the operation described by Dr. Goldspohn is an ideal one for the repair of median tears, but, unfortunately for his operation, the tears that produce relaxation of the vaginal outlet are lateral tears. One never sees median tears which interfere with the pelvic support. Patients suffering from median tears that even extend into the rectum very seldom suffer from lack of pelvic support, except as regards continence of the bowel contents. Cases that complain of distress in walking and standing with a laceration of the perineum have lateral tears which may take place at the point of insertion of the muscle. This can be determined by palpation. If one inserts the finger into the vagina and hooks it at about the portion where the anterior part of the levator ani muscle is, in the unruptured case he finds a band of muscle that extends from

¹ See original article. p. 771.

the posterior wall forward as far up as the anterior vaginal wall; but in cases of relaxation of the vaginal outlet such palpation will show more or less absence of the muscle—that is, it will be found retracted. With the doctor's operation I would contend that it is impossible to satisfactorily repair a lateral tear, for the reason that, as I understand it, the operation does not permit one to suture the upper part of this muscle, or, if the muscle is torn from the bone, to catch some of the connective tissue near the pubic bone to which the muscle can be attached. For lateral tears the Harris operation seems to be an ideal one, and I believe the same result can be accomplished with the Emmet operation and with the A. Martin operation. I have seen Martin do his operation numerous times and the results seemed perfect.

Dr. Goldspohn stated that the Emmet, the Hegar, and the Martin operations were only cosmetic in effect. The strongest argument against that statement is the fact that the Emmet operation has stood the test of about twenty years, and is to-day favored by most of the leading gynecologists over this entire country. My experience with the Emmet operation, which is the one I usually do, is that the results are nearly always perfectly satisfactory.

The lifting up of the flap that the doctor referred to would seem to be of some advantage in protecting the wound against the vaginal secretions; but there is only slight danger of sepsis in these cases, and, as there is no strength in the flap, it would appear unimportant whether one leaves it puckered up or whether one removes it.

Another point that I would dispute is that the Emmet operation shortens the posterior vaginal wall. In doing the Emmet operation one should pick up a point in the median line which represents the height of the denudation in the median line, and draw that point to the urethra, and see whether it pulls down the uterus or not. If it does not, then the denudation does not go high enough to shorten the posterior vaginal wall. If it does pull the uterus down, then a point lower down should be selected. Examination of a large number of cases in which the Emmet operation was performed has, in my experience, not shown any shortening of the posterior vaginal wall. The flap the doctor makes consists very largely, in cases where there is a rectocele, of a redundancy of vaginal mucous membrane, and it would seem to me just as well to remove that as to pucker it up in the wound.

DR. FERNAND HENROTIN.—I do not see that we have improved very much on the Emmet operation. I have had occasion to see a great many cases that were operated upon by the Emmet method. The Emmet operation has done a good deal for these cases of laceration of the perineum, and it is standing the test of time better than any other method I have ever seen. I have likewise had the pleasure of doing this operation a good many times. The fact of the matter is that formerly we were stimulated by the prompt and expedi-

tious manner in which the late Lawson Tait operated on these cases by making two or three strokes, putting in two or three stitches, and completing the operation in six or seven minutes, and we began to do the Tait operation. This (referring to diagrams) was practically the first incision; then we lifted up the flap like Mr. Tait, and then we began to use that method of passing stitches as represented in one of Dr. Goldspohn's diagrams, from side to side, without using any of the precautions that the doctor took. In operating for lacerations of the perineum we all do very much what Dr. Goldspohn says we should do, and as our natural mechanical instincts lead us to do as a matter of course. We get somewhere behind and under the vagina, and the proper thing to do, if we want to bring about the proper conditions, is to bring the lateral structures to the median line, feeling the edge of the fascia and outlining the muscles perfectly, and we all know that by introducing the finger into the vagina we can feel the sagging in the lax portion. In doing the old Tait operation we saw the weakness of it, and it was easy to recognize that the deeper structures were not brought sufficiently from the side to the median line; and with that idea in view, when catgut began to be used in these structures and was considered sufficiently aseptic to give a reasonable degree of safety for the future, I remember distinctly, time and again, of trying to do a modified Tait operation, and I would do exactly what Dr. Goldspohn does in the operation he has described. By the use of catgut I would bring the side structures down to the median line so as to build up the perineum and the structure underneath. I do not deny that the essayist has good results, so far as strength and support which he gives beneath the perineum, and the principle is correct. But after a certain time (and I have not tried the operation lately) the catgut would not remain in there very well, and in at least three cases the catgut has become septic. It has been my experience that buried catgut sutures in these cases give rise to sepsis very easily. Whenever we bury catgut inside a muscle we get sepsis, in spite of all we can do sometimes to prevent it. We are so close to the rectum that some of the lookers-on may think the operator goes through into the rectum by operating in this way, and when we are so close to it we are apt to get sepsis. It has been my experience that we get sepsis set up very easily from catgut used in this place. Furthermore, if we are in a hurry, sometimes we get a severe hemorrhage if something should give way.

Another point is with reference to the flap of tissue referred to by the essayist. He says that he brings it in a redundant fold up above. As Dr. Watkins has said, it is attenuated vaginal structure, and how much easier it would be, when we get that far, to cut off the redundant portion at the beginning, to make it symmetrical and cosmetic, as Emmet's operation does, and take away the triangle on each side so as to allow the structures to fall together, which they do, in my

opinion, infinitely better when the triangle is out. When we once have the triangle well denuded, the structures fall together much more easily in the median line.

Practical experience has apparently proved to me that the modified method I have described is much better than Emmet's. We could not tell, unless we saw one another operate and judged of one another's work, whether this or that particular method has any advantage over others. After all, it is very difficult to get any better permanent results than are obtained by the Emmet operation, if the operator goes well up at the side and the lateral structures are brought well into the median line.

DR. HENRY BANGA.—I wish to emphasize the point made by the last speaker that we must bring the two sides together. I have not heard either Dr. Goldspohn or Dr. Henrotin advise the picking-up of tissues to be brought together before the needle is passed through. For instance, where the rectum is protected against the needle, before the needle is inserted, if one would pick up with the forceps the tissue, then draw it forward toward the median line, and, while that cone of side tissue is drawn up, carry the needle through the base of the drawn-out cone, he surely could get more tissue inside of the loop than if he relied on the picking-up of the needle. The same thing is to be done on the other side. You first pick out the tissue that you wish to bring together, draw it as far as the elasticity of the tissues will allow, then go through the base of the drawn-out tissue and come out to a corresponding point on the other side. If that principle is carried out all through for every suture, I am sure that you will be able to bring together a considerable amount of tissue which will be under the least tension or traction, and you will have throughout good coaptation.

There is another point that I wish to refer to. If I am correct, Dr. Goldspohn puts in all his stitches in the axis of the vagina, while I think he ought to put them in two different directions. The prolapse of the rectum, or the rectocele, should be closed in the axis of the vagina. But the perineum, as Dr. Henrotin has mentioned, should be brought together in a line that is at a right angle to the vagina. It should be brought together perpendicularly. If you put your finger in the rectum, and another one in the vagina, you will find that the body of the perineum has a triangular boundary line. If one continues to put in stitches through the vagina toward the skin of the perineum in this manner, he will not restore the body of the perineum.

DR. GOLDSPOHN.—What suture would you have changed?

DR. BANGA.—Here you have come to a place where you have put in your superficial stitches to close the skin. That is wrong, in my opinion, because at this point here (indicating) you should not bring together the skin, but the sphincter, and the sphincter comes together this way (illustrating), while the vagina comes together in another direction.

DR. GOLDSPOHN.—I do not see the propriety of that stitch. Certainly, the perineal body is a triangular mass of tissue, and the base of the triangle is the skin surface. We are not dealing with the sphincter in this simple tear.

DR. BANGA.—It amounts to the same thing.

DR. GOLDSPOHN.—Admitting that the triangular mass of tissue is the body of the perineum, we are closing up the long side of the triangle, which is the skin surface, and we do not need perpendicular but transverse sutures for that purpose.

DR. BANGA.—But they should be called skin sutures. They should include the sphincter.

DR. GOLDSPOHN.—But we are not dealing with any sphincter.

DR. BANGA.—You spoke of total tears.

DR. GOLDSPOHN.—This series of pictures represents simple tears.

DR. BANGA.—I do not see how you would have so many stitches if the body of the perineum was not involved in the tear.

DR. GOLDSPOHN.—This is the skin surface of the body of the perineum, the long side of that triangular mass of tissue.

DR. BANGA.—Do you make the perineum before you sew the vagina?

DR. GOLDSPOHN.—Before beginning with the pelvic floor I elevate the posterior vaginal wall. I first prepare the rectum and sphincter; after that I take care of the perineum and pelvic floor.

DR. BANGA.—I do not understand how you do it.

DR. GOLDSPOHN.—As I have previously said, I would close the vagina, the tear in the vagina, to cover up the rectocele, by taking tissues from both sides until I came to the body of the perineum. Then I would not take any of the tissues together in a vaginal direction. I would begin to close the perineum and do the same thing. In a total tear of the perineum, when we look at it, we have a gaping opening because the tissues have retracted laterally. The object of the operation is to again make a ring around the rectum. Therefore I would also go, first, with forceps or even with volsella to the side, pick out as much tissue as I could pull forward toward the median line, then I would go through with needle, come out in the median line at this point (indicating), and pull out the tissue on this side, go in again with the needle, then come out at this point. For this purpose I would use silkworm-gut sutures.

DR. HENROTIN.—I would like to ask Dr. Banga whether he buries catgut in the perineum.

DR. BANGA.—I bury catgut to bring together the levator ani, that would be over the vagina, but not on the perineum proper. Usually it may be one stitch, or it may be two.

DR. HENROTIN.—You have buried your sutures?

DR. BANGA.—Sometimes. I bury sutures if there is a large rectocele, but not as a rule.

DR. HENROTIN.—Have you ever had any trouble following their use?

DR. BANGA.—I do not think I have.

DR. HENROTIN.—You do not bury catgut very often?

DR. BANGA.—I do not make it a rule to bury it, except where there is a pronounced prolapse. I look upon rectocele as a ventral hernia almost; it is a prolapse between the separated portions of the bladder. I differ from Dr. Goldspohn that the perineal stitches are the heaviest ones which contain the most tissue.

A word or two about uniting the sphincter. I am always surprised to hear of end-to-end union of the sphincter. I have tried, in every case that I have had, to find anything resembling the end of the sphincter, but have not been able to do so. Furthermore, it is absolutely useless to hunt for the sphincter, because we get the desired result without finding its end or trying to approximate the two ends. When we look at the torn perineum we notice a gaping and we see that the sides of the tear are scooped out. They are hollow on either side, which is due to the retraction of the tissues that form the body of the perineum. It is the fascia also, the elastic element in the body of the perineum, and I think it is partly also the sphincter. After the tear has healed, in the retracted cicatrix which we observe there is always somewhere attached the end of the sphincter. Therefore, if you succeed in securing broad union of these two retracted sides, you can feel sure that you have also the two ends of the sphincter. You do not put in a suture before you have grasped the tissues with volsella or strong forceps, and have drawn it forward toward the median line, and while you are holding it there you pass the needle through, being sure that you have it within the loop, so that it cannot retract. If you do that with two or three stitches you will be sure to get the two ends of the sphincter together. If you succeed in fixating the two ends, then it can contract, and the result will be continence.

DR. THOMAS J. WATKINS.—There is one additional point I would like to mention, and that is, in relaxation of the vaginal outlet the anal portion of the rectum always becomes more or less displaced backward, and the backward displacement is always proportionate to the amount of relaxation. One of the advantages of the Emmet operation is that it restores the rectal as well as the vaginal canal to their normal locations. It would seem to me that Dr. Goldspohn's operation would have a tendency to increase the backward dislocation of the anal portion of the rectum.

Another important advantage of the Emmet operation is that a large number of varicose veins in the sulci of the vagina are included in the sutures.

DR. LESTER E. FRANKENTHAL.—I wish to indorse what Dr. Henrotin and Dr. Banga have said, and would simply add a word or two to a remark made by Dr. Goldspohn. When he spoke of complete perineorrhaphy, he stated that the vaginal

flap in being turned into the rectum protected the plastic from infection. I do not believe that is the object in turning the flap into the rectum, but the aim is to draw it up high in the rectum and to invert the edges of the rectum; it is for the purpose of turning the rectal mucous membrane inward toward the rectum, so as to permit contact of the two raw surfaces, and not to allow the normal mucous membrane of the rectum to come in apposition, as it would frustrate union where no separate stitch is used. In that operation it is unnecessary to sew the rectum separately; it will fall together, and there is no necessity of making a separate stitch.

DR. GOLDSPOHN (closing the discussion).—With reference to the remarks of Dr. Watkins about central tear of the perineum, if he will look up the gynecological literature on central tear of the perineum he will find that it never means laceration back here (indicating), but means a tear right through the body of the perineum between the vulva and anus, and not the posterior commissure of the vulva—a very rare occurrence, but it does occur. Lacerations back of the anus practically never occur. The lacerations are always in front and lateral. The remark he makes about inferior denudation of the posterior and lateral walls is unwarranted, because this is higher than anybody denudes with the most extreme use of the Emmet operation; and it gives *prima facie* evidence that I can deal with these lateral structures in the most effective manner. If anybody deals with the levator ani near to the symphysis pubis, why certainly I do with this procedure, because nobody denudes as extensively as I do.

DR. WATKINS.—Do you expose the levator ani near to its pubic attachment?

DR. GOLDSPOHN.—No, sir; and nobody else does. Median approximation of the lateral parts as far forward as that would shut off the urethra and vagina.

With reference to the Emmet operation, Dr. Watkins did not quite understand me when he construed my version to class the Emmet operation as no better than all the other old standard operations. I said distinctly in a special sentence that of the old standard operations the Emmet is the best, and as it has been modified by Noble, Gill Wylie, and Howard Kelly the lateral bearing structures are actually isolated and caught in the needle quite as well as I catch them. But they are merely approximated and not coaptated, *i.e.*, a part of the posterior vaginal wall remains between them. The Emmet operation never gets the lateral bearing structures at a distance of two inches from the outside (from the entrance at the vulva) into actual median contact with each other; but it always leaves, as I said in my paper, a portion of the vagina drawn down into the space that is left between the lateral structures that are approximated, but are never actually reunited in the median line in front of the rectum.

With reference to the crown suture of Emmet, by which he overcomes the rectocele, it is a sailing between two evils. If

he will put the crown stitch far back and draw the apex of the rectocele thoroughly forward, he will overcome the rectocele, but shorten the posterior vaginal wall, which is an evil because it tends to retrovert the uterus. If, on the other hand, he will avoid the latter evil by putting the crown stitch further forward than its summit, there will be part of the rectocele left.

I would answer in this connection the remarks of Dr. Watkins about displacing the rectum backward. To displace the rectum backward would require something to be done posterior to the rectum. Anything that operates on the anterior face of the rectum cannot displace the whole rectum backward. This operation displaces only that portion of the rectum backward which has usurped space belonging to another organ, namely, the vagina; and certainly the most efficient way to overcome this rectocele is to build a bridge across over this part of the rectum and beneath the vagina, made out of such serviceable structures as the lateral halves of the levator ani and its associated fascia. That simply limits the rectum to its normal space, so that it cannot usurp the space belonging to the vagina. This subject is one of greater importance, with reference to the play of the supreme forces in the female pelvis, than simply a matter of so much relative space in the vagina and rectum. If the latter is not properly limited posteriorly, but is allowed to usurp, to rise up, to bulge into the vagina, it means altering the direction of the fecal current in defecation. Instead of being held in its proper channel posteriorly and emptying the rectum with facility, the force is applied in an upward and anterior direction into the vagina and against the so-called perineal body. Under such conditions the posterior vaginal wall rises still higher and higher, continually pulling upon the attachment of the posterior wall on the cervix, and drawing the cervix forward out of its place in the hollow of the sacrum. That means retroversion with all the evils that are connected with it.

I do not wish to be understood as saying that the Emmet operation is only cosmetic. That would be an injustice to Dr. Emmet. But the modification of it, as made by the three men I have mentioned, is superior, in that a bridge is built over the rectum, made out of structures better built than any part of the vaginal wall used as a patch to fill in to hold the structures.

So far as the flap is concerned, I grant that it is merely a matter of secondary importance. If some one chooses to excise the flap, he may do so. In uniting the structures the sutures should be applied in a transverse direction, never in an antero-posterior direction. It is a matter of secondary importance, in bringing the parts together, whether the operator leaves a flap to lie on top of it or removes it. I prefer to leave it, because it makes a shorter operation. If I excised this flap I would have to do additional work, namely, to coaptate the wound edges of the vagina wherever I cut it. It is simpler

to let it adjust itself in folds upon the lateral parts brought together under it. I would have to do additional sewing and carefully coaptate the edges of the excised flap, which would take much more time. If I were to do an Emmet operation it would take three times as long as to do this. As a rule, this operation does not occupy more than fifteen minutes. It is difficult to place the first sutures; after the first two are in place the others are easy and it is quickly finished. There is no foundation for Dr. Henrotin's remark about the vaginal wall, aggregated in folds, coming in between or hindering the approximation of the lateral parts, because the latter are united near the median line before the vaginal flap is allowed to come down upon the bridge built beneath it. The lateral structures are coaptated in beneath the vagina. If I wanted to prolong the operation I would cut out the flap, but we are dealing with structures that may be torn again; more babies may follow and more lacerations; and under such conditions I think it is wise to leave all structures that are not seriously in our way.

DR. HENROTIN.—What about sepsis?

DR. GOLDSPOHN.—I am very glad Dr. Henrotin has mentioned sepsis. I have had suppuration occur in this operation, but certainly not more than once in twenty times. Suppuration does not worry me here at all. In the cases that have suppurated, before I had as much experience as I have had now, I feared there would be relaxation and non-success, but, strange to say, suppuration made very little difference. The catgut holds until the parts have been held together sufficiently long for union to take place without suppuration, and in the cases that have suppurated the results have not been materially different from those that have not suppurated.

With reference to the holding quality of the catgut, I should say that if the catgut hold two weeks that would be enough. I never use chromicized gut, always gut that has been hardened in formalin and sterilized by boiling.

With reference to hemorrhage, I have in mind two cases in which hemorrhage occurred after the patients were put back to bed, so that by an examination by the rectum or vagina one could detect the accumulation of blood. Hemorrhage has not proved a serious matter. The patients have never been in an alarming condition on account of it, and it has been arrested usually by ice bags against the perineum and opium for the pain. Where the hemorrhage is severe, the suggestion made by Dr. Banga about picking up a mass of tissue, intended to be grasped by the needle, by means of a forceps might be thought of. It would avoid puncturing some blood vessels, perhaps. But the suggestion of Dr. Banga is given upon the supposition that we are dealing with a wound where everything we touch is open to sight. As I remarked in the beginning of my paper, this is a well of blood; nothing is seen; it is all touch-work, and I could not use a forceps to pick up the tissues. I must have my finger there to precede the needle, and I cannot use

forceps and my finger too. I could not pick up tissues in the forceps and go through there, because I want the use of my finger for its tactile sense. That, above all things, is important as a guide for the depth of the needle's excursions, and particularly in protecting the rectum.

As to Dr. Banga's suggestion of placing sutures in the true skin of the perineum in an antero-posterior direction, I cannot see the rationale of it. I would have to be further informed as to its propriety. Everybody closes the skin portion of the perineum or perineal body by means of transverse sutures. We do not want to shorten the distance between the posterior commissure and anus, and we must pass transverse sutures to leave that distance normal.

With reference to the remarks of Dr. Banga about suturing the sphincter, I must differ with him *in toto*. In the first place, as regards finding the ends of the sphincter. The ends of the sphincter are found in little dimples. By taking off the superficial skin or muco-cutaneous surface, then using forceps in the bottom of this dimple (indicating), getting hold of the probable end of the sphincter and dissecting around it, it is possible to raise the end of the sphincter and suture it. Then, with the tension suture placed beneath or beyond it, as suggested by Hirst and by Kelly, we can relieve the approximation sutures of tension and get union of the sphincter; and that makes a difference in the function of the part, inasmuch as the patient will be able to retain liquid stools and gases as soon as the parts have healed. That was not the rule formerly until a later period. The condition that Dr. Banga has described to us on a little drawing, representing the sphincter ends approximated but shifted past each other into different planes, was first pointed out by Küstner about three years ago in the *Centralblatt*. Such approximation and indirect union of the sphincter rarely gives primary retentive capacity for fluid feces and for gases. Such defects of the sphincter in the course of years are more or less overcome by Nature, but it is very unpleasant when patients are unable to hold bowel gases or liquid stools. Ideal results can be obtained, as I know from a couple of cases of my own, by the method of Küstner, accepted by Kelly.

DR. BANGA.—I have seen some cases in which there was complete continence after the operation. Continence is the rule if we get good broad union in the median line.

DR. GOLDSPOHN.—Your statement is at variance with that of Küstner whom I cited. He says it is the invariable rule that these patients are not able to hold everything.

In reply to Dr. Frankenthal relative to the flap being turned into the rectum, if he will look at the illustration which Howard Kelly gives he will see that so much of the flap is really turned down that the tip projects out of the anus after the parts above have united.

Summarily I can say for my operation: I know that I produce a real restoration of the pelvic floor proper. I also know

I can do it on top of almost any combination or series of operations, because it takes very little time and work to do it. If I were to do an Emmet operation and get equally good results, I would have to anesthetize the patient a second time in most instances.

TRANSACTIONS OF THE SECTION ON GYNECOLOGY OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, March 21, 1901.

JOHN C. DA COSTA, M.D., *Chairman.*

DR. W. REYNOLDS WILSON read a paper entitled
REPORT OF A CESAREAN SECTION IN A CASE OF OBLIQUELY
CONTRACTED PELVIS.¹

DR. EDWARD P. DAVIS.—Within a short time we have had at the Jefferson Maternity two cases of obliquely contracted pelvis in which the deformity resulted from disease or accident which prevented the patient from walking during early life. In the first of these, at 14 years of age, the patient suffered from disease of the right knee joint, probably tuberculous. She was put at rest for some time and obtained partial recovery with stiffness. As she was unable to work, the joint was excised, and she recovered with complete ankylosis. When under my observation she was about 20 and pregnant for the first time. The right lower extremity was considerably shorter than the left, the mobility of the two hip joints was normal, the pelvis was obliquely contracted to three centimetres but otherwise well developed. On examining the patient internally, it was found that the contraction would probably not prevent the passage of the fetus in the normal oblique diameter. At labor the child passed through the pelvis spontaneously, utilizing the larger oblique diameter at the brim. There was no typical mechanism of labor, and the variations in the mechanism were of decided interest. The second case was of lesser degree and resulted from injury to the hip. The patient was able to bring the head of the child into the brim of the pelvis, when delivery was completed by forceps.

In two cases of disease of the sacro-iliac joints obliquity of the pelvis was present, but not to a degree sufficient to prevent the passage of the child through the pelvis.

A direct injury attended with violence may produce an irregular obliquity of the pelvis which would prevent the spontaneous expulsion of a living and viable child. A woman when a young girl had fallen from a tree and fractured the neck of the femur, the head of the bone splintering the pelvic bone. She recovered, with fairly good use of the lower ex-

¹ See original article, p. 791.

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Dr. W. C. HERTZ - I have seen a number of ...

Dr. B. C. HERTZ read

SOME CLINICAL MEMORANDA.¹

Dr. W. REYNOLDS WILSON.—Without differing with Dr.

¹ See original article, p. 796.

Hirst, whose preference, as I understand it, is for the later primary operation, I should be inclined to entertain some doubt as to the result of stitching the cervical laceration as early as the fourth day after delivery. The chance of local infection of the wound surface appears to me a disadvantage. In addition to this, involution at this period is always an unknown quantity; the placental site may be the seat of unorganized or septic thrombi, which, by reason of the traumatism of such operation, notably the traction upon the cervix, may become dislodged, giving rise to a pyemic process.

DR. STRICKER COLES.—I have been much interested in the report of Dr. Hirst's cases, especially in the one of necrosis. I have always felt that when we have a case of sepsis we never know when we have necrosis of the wall. I recently saw a notice of an article in the *British Medical Journal* giving a report of four or five cases of necrosis of the wall of the uterus. In curetting such cases there is always danger of perforation of the uterus. I believe also that many cases are perforated in such a condition. I have never seen such a case, but have been on the lookout for one. I think Dr. Hirst's method of partial hysterectomy is very good. I believe also that after a long labor, when the cervix is edematous and the vitality of the tissue very poor, you will not get good union until after involution. In one case in which there was total failure the cervix was elongated and protruded from the vulva. After labor the cervix was badly torn, and the operation was as much outside the body as in; every stitch could be seen. In the majority of cases I always suture after labor, and usually the result is good. Of course, if the result is not good, two weeks afterward a secondary operation could be done. I do not think primary operation has done any harm. I prefer to sew up the pelvic floor primarily. In two weeks there will not be much contraction of the muscle. If the sphincter is torn the tendency will be to retract. I have had very good results in the hospital and outside.

Often I think if you do this operation at once you get good results, whereas if it is put off the chance to do it will not be given. I would therefore try to get the result at the time of labor. In those cases which have been in labor a long time the tissues are bruised and you will not get a good result. but then, of course, operation can be done at the end of two weeks.

DR. EDWARD P. DAVIS.—Dr. Hirst's resection of the septic uterus might easily become an almost entire hysterectomy. Clinical observation shows that necrosis of the puerperal uterus is very often present at the fundus and that almost the entire fundus may be softened and thoroughly broken down. In such a case the removal of the necrotic tissue would leave a stump of uterus at the lower uterine segment, which would be a practical hysterectomy. The one point in favor of such a procedure in contrast to complete hysterectomy is the fact that shock would be less, the danger of infection of freshly opened tissue would be less, and that the risk of hemorrhage would probably be less.

My experience with immediate closure of the cervix has not been unfavorable. Where hemorrhage occurs from a badly torn cervix, one or two stitches on each side stop the hemorrhage and are usually followed by union. In some cases of induced labor where it is necessary to dilate the cervix artificially, considerable laceration may occur; in several instances in my experience complete union has followed suture. Possibly the cervix before full term is less likely to become edematous and in a better condition for immediate union than later in pregnancy. I have not been able to trace infection to immediate closure of the cervix. I should prefer to close a badly torn cervix by uniting the greater part of the torn tissue, not attempting a complete operation; and if union did not follow, it would be best, I think, to operate later. Regarding the choice of a time for closure of the perineum and cervix, we must decide in accordance with the condition of each individual case. Involution should be well advanced and lactation well established. There is always the risk that the operation may disturb lactation in a sensitive patient.

The objection urged against immediate operation upon the cervix after the tissues contract and after the sutures are found loosened and not holding is an object which must be recognized by all. There may be something in the choice of suture material for the immediate closure of the cervix. Thoroughly chromicized catgut has given me satisfactory results in these cases.

DR. GEORGE M. BOYD.—I would like to ask Dr. Hirst how long after delivery he performed these operations (partial hysterectomies).

DR. B. C. HIRST.—The operations were performed between four and five weeks after delivery.

DR. BOYD.—Sometimes the operation is not performed until more than a month after delivery and with the infection localized. Operative interference early in the puerperium proves serious.

As Dr. Davis suggests, I have more than once put in one or two stitches to control hemorrhage in a lacerated cervix. I have not made it a rule to close the cervix immediately, although I have always felt it wise to perform immediate repair of the perineum.

I think Dr. Hirst's suggestion to repair the injury before the obstetrician loses sight of the case is a good one, but it seems to me wise to wait even longer than two weeks. The uterus is not well involuted at that time, and it is possible to get even better results by waiting longer.

DR. H. D. BEYEA.—The cases which Dr. Hirst reports are very interesting and represent, it seems to me, what every one sees now and then. I think the class of cases that do get well when any operation is done are those operated on early. I have seen two cases of this sort, one in which microscopic study of the uterine wall showed streptococcal infection of the entire uterine wall. These cases were saved by hysterectomy.

I have seen cases four or five weeks after delivery in which there was what I think Dr. Hirst means by necrosis. There was infection by streptococcic organisms, formation of pelvic abscess, and tubal abscess on one side. Hysterectomy was done, and I have seen such cases get well. The temperature is not high. The organisms seemingly lose their virulence. Had not the abscesses been opened early there would have been general peritonitis and death.

I have had no experience in the repair of the cervix immediately after labor, that having been confined to repair of the perineum. I have operated upon a woman who had for hours before delivery occipito-posterior position, and in which there was a rotation into the hollow of the sacrum. The perineum tore through to the sphincter, and the septum was torn as high as the cervix. I did immediate repair and got a good result. My experience in regard to the sutures in early operation on the cervix is much like that described by Dr. Hirst, and I have resolved not to operate immediately after delivery, but to wait for at least six or eight days, possibly two weeks.

DR. JOHN B. DEEVER.—Dr. Hirst's paper suggests to me one or two points. It has been my lot to see a number of post-puerperal septic cases after miscarriage and abortion in the first three or four months. I have recently had under my care three cases of post-puerperal septic peritonitis. All three were operated upon promptly and all three recovered. In two of the cases I found the pelvis full of mucilaginous material which I believe in a short time would have become pus. In the third instance there was pure pus. In one case of a young girl with salpingitis, thorough cleansing and massage of the Fallopian tubes, instead of extirpation, was accomplished, and the patient recovered very promptly. I do not see the late post-puerperal sepsis. I am aware of the insidious nature of the infection and believe in prompt interference. Upon slight evidence of peritonitis I would open the abdominal cavity, and if nothing is wrong no harm will have been done.

Personally I have little faith in the use of intraspinal cocaine anesthesia.

Cases of intraligamentary cyst like that reported by Dr. Hirst are cases for enucleation. If they are of long standing, if there is much inflammatory action and they are densely adherent, we meet with more blood vessels than under ordinary circumstances, and bleeding is sometimes hard to control. I approve of Dr. Hirst's plan of packing off the vagina and closing a peritoneal flap, making drainage extraperitoneal. I have drained through the abdominal route by drainage tube and packing with gauze. The probability is that Dr. Hirst's is the more satisfactory, particularly so in regard to the cleanliness of the vagina secured.

DR. JOHN H. GIRVIN.—In the repair, immediately after labor, of a lacerated cervix it seems to me that very great care should be exercised in the selection of cases to be operated

upon. I think it is a mistake to teach that all lacerations need immediate repair. The cases of laceration of the cervix which produce the worst results are those in which the tear extends into the vaginal vault, where the lower part of the broad ligament is affected, and in almost all of these cases we ultimately get pain and tenderness. Here there is no danger of interfering with drainage; immediate repair is feasible. It saves the woman many weeks of decided discomfort if we can avoid having an amount of scar tissue form in the lower part of the broad ligament. In those cases where there is a large amount of bleeding at the time of labor immediate repair will benefit the patient, and there is more likelihood of healing than when the tear is in the lower part of the cervix only.

As to the question of sewing up after two weeks, which may be called an intermediate operation, I think the danger, under ordinary circumstances, of interfering at this time with the position of the uterus and stretching the broad ligaments, unless great care is taken, is greater than if the operation is done earlier or later.

DR. HIRST (closing).—In reply to Dr. Davis I would say that silkworm gut was used uniformly.

The intraspinal cocaine anesthesia was urged in the operation for ovarian tumor, but from inquiries which I had made I had been deterred from using it. I was told by one gentleman, who had acted as the medical expert in two cases, that during the spinal anesthesia he considered the patients desperately ill, the heart action being extremely bad. You cannot say that of a patient under ether. Dr. Judd, who is the anesthetizer in all my operations, rarely uses more than three ounces of ether. In the case of aneurism not more than three and one-half ounces of ether were used, and I am confident that the woman did better than would have been possible under spinal anesthesia. That method does not appeal to me very strongly. Ether well administered by a good anesthetizer, with oxygen, is, I believe, much safer.

DR. R. P. McREYNOLDS reported a case of

RUPTURED INTERSTITIAL ECTOPIC GESTATION.

This case was brought to the Presbyterian Hospital March 10. Through the kindness of Drs. Duer and Girvin she came under my care. I shall read the history, not because it is an unusual one, but, on the contrary, because it is almost typical, embracing as it does every symptom and sign of the disease.

Sarah H., white woman, age 23, has had two children; the last one, 10 months old, she is still nursing. Five months after last confinement she began to menstruate and was regular for three months; she then missed two periods—except at the last one she saw a few drops of blood. She has had some morning sickness during the past two months, and felt that there was something wrong, but did not feel as she felt when

pregnant before. She has had no sharp pain at or between the times for her regular periods.

On March 8 she got out of bed at 5 A.M. to get a glass of water. On getting back in bed she noticed a sudden, sharp, severe pain in lower abdomen on the right side. This pain continued all day. Any attempt to draw up legs or raise the head caused excruciating pain. The next day, March 9, pain was somewhat less, but she was very pale, temperature sub-normal and abdomen commencing to swell, bowels were constipated, and she could eat nothing.

When I saw her at 9 P.M. March 10 the abdomen was much distended, tympanitic and tender all over, especially so in the right iliac fossa; breathing was hurried and difficult; pulse soft and 136 to the minute; face anxious; mind clear. Vaginal and rectal examination showed a soft mass behind the uterus in cul-de-sac of Douglas, more pronounced upon the right side. Cervix uteri soft. Uterus could not be mapped out on account of the abdominal distension.

On opening the abdomen we found the peritoneal cavity filled with bloody serum and clotted blood. The uterus was about twice the normal size, and at the left cornu there was a ruptured gestation sac. Conception had evidently taken place just within the uterine end of the left tube; in its growth the sac had involved a portion of the fundus of the uterus. We tied off the ovarian artery and removed the left tube and ovary. By wedge-shaped incisions we cut the diseased tissue composing the gestation sac from the fundus, and the edges of the resulting wound were approximated by interrupted silk sutures. The fetus, which was floating among the intestines, and all blood clots were removed by flushing out with normal salt solution. The abdominal wound was closed without drainage by through-and-through sutures, the peritoneal cavity being filled with normal salt solution before closing. About twelve hours after operation the woman died, seemingly from a pulmonary embolism as the immediate cause of death.

The after-treatment of this case would seem to be an ideal one for intravenous injection of normal salt solution. Consequently, about ten hours after the operation, when she began to be very restless and show signs of failure, the resident physician injected one thousand cubic centimetres of normal salt solution into the median basilic vein. The result was the pulse became weaker and more rapid, respirations deeper and more sighing, temperature rapidly went up; she lost consciousness and died three hours later.

I have not had an opportunity to look up the records of very many cases where intravenous injections of normal salt solution have been given, but I have found a few: in one (a case of pneumonia) the patient died while it was being given; in another (typhoid fever) the temperature went from $100\frac{1}{4}^{\circ}$ to $107\frac{3}{4}^{\circ}$ a few hours after the injection; in another (a case of crush of leg) temperature went from subnormal to $104\frac{1}{4}^{\circ}$; in

another (a pneumonia case) temperature went from 100° to 102° and patient died five hours after the injection was given.

Of course these are very few cases to draw a conclusion from, and all were desperately ill when it was given, yet I believe intravenous injection of normal salt solution is accompanied by some danger and should not be indiscriminately resorted to. I think it would have been better, in this case at any rate, if we had kept her quiet by the hypodermatic injections of morphia and allowed Nature's workshop to repair the damage.

In looking up the literature I find that a number of cases of interstitial ectopic gestation have been reported. The greater portion of them have ruptured externally and the fetus expelled into the peritoneal cavity, but a few have ruptured into the uterine cavity and the fetus expelled through the vagina.

The mortality seems to be higher in the interstitial form than in any other form of tubal pregnancy.

DR. B. C. HIRST.—I think the interstitial form of extra-uterine pregnancy must be distinctly rare. I have operated on 42 cases of tubal pregnancy, and of that number only one might be justly called interstitial, and in that case the ovum did not involve much of the uterine structure. It was mainly in the uterine extremity of the tube. I have therefore no personal experience with this form of extrauterine pregnancy. I think Dr. McReynolds' operation was a most appropriate one for such a case, and is the one I feel I should do myself if called upon to deal with such a case.

As to the submammary injection of normal salt solution, it seems to me it is quite as efficacious as the intravenous or the intra-arterial and freer from danger. I should choose the radial artery rather than a vein, because the fluid would not so immediately be thrown into the heart, and I think the risk would be less; also, there is not the same danger of air embolism in the arterial injection as there would be in the venous.

DR. EDWARD P. DAVIS.—In connection with Dr. McReynolds' case I may describe a case of interstitial pregnancy in which the ovum was lodged in the right cornu of the uterus and in which rupture occurred. After the removal of the ovum and blood clot it was very difficult to check the hemorrhage from the uterine wall. The condition of the patient was so desperate that there was not time to excise the uterine wall. Hemorrhage was checked by the application of the thermocautery to the bleeding surface and by the insertion of several silk stitches. Gauze was packed about the site of operation, and a gauze drain brought out at the lower end of the abdominal incision. In this case very copious intravenous saline transfusion was practised during the operation. The patient's life seemed to have been saved by this procedure. It is my custom, in all operations of gravity, to have the apparatus ready for intravenous transfusion and an assistant

who can perform it. The transfusion is done during the operation, just before the application of the dressings or while the dressings are being applied. The advantage of very prompt transfusion is great. The patient is under control; the fluid introduced restores the equilibrium of the circulation, which has been disturbed by the operation, before extensive changes in the tissues have taken place. In Dr. McReynolds' case the late performance of the transfusion may have been an element in producing the unfavorable result.

DR. JOHN B. SHOBER.—I am entirely in accord with Dr. Hirst in regard to the value of submammary hypodermoclysis and employ it in all my operative cases attended by shock or extensive loss of blood. The results have been most satisfactory. The temperature of the solution should be 120° F. and the breasts should never be over-distended. The amount of fluid the tissues will absorb in this way is astonishing. A quart under each breast can be given in about three-quarters of an hour. This may be repeated as frequently as may be desired. The response is usually prompt, the pulse becoming stronger and steadier during the procedure.

In desperate cases perhaps quicker results may be obtained by intravenous transfusion of normal salt solution. This method is particularly applicable in cases which have been attended by great loss of blood. Some time ago I adopted the plan of filling the abdominal cavity with normal salt solution before closing the wound. The patients react more promptly from the operation, there is less ether nausea, and they complain less of thirst. When drainage is used, instead of leaving the solution in the abdominal cavity, I order a quart of normal salt solution to be given by high rectal injection before the patient comes out of the ether.

DR. H. D. BEYEA.—I operated upon one case last year in which the pregnancy was not at the uterine cornu, but at the tube. I passed a ligature around the uterine cornu, checked the bleeding, and the patient recovered.

I have here the temperature chart of a case operated upon on the 15th of February. I saw the woman in the eastern part of the city one afternoon about 4 o'clock. She had been taken with pain on the left side and was almost pulseless. Her physician gave her hypodermoclysis immediately afterward, and when I saw her the pulse was about 180°. I had her sent to the University Hospital, and operation was performed immediately. Hypodermoclysis was performed during the operation and all sorts of stimulation administered. One-fifth of a grain of strychnia was given within the first hour. This was given by mistake and seemed to do a considerable amount of good. The patient made a normal convalescence and left the hospital yesterday.

DR. DEAYER.—I take great pleasure in speaking in favor of intravenous injections of salt solution. I think it one of the greatest boons that surgery has at the present day. I do not mean to say that it is not attended with great risk. I am very

careful not to allow the house doctor to do it for the first time, except under my immediate supervision.

Before the day of the intravenous injection of salt solution I used the submammary method and by the rectum—seldom the former, which I think is attended by more risk than the intravenous injection. It is necessary, of course, to exercise very great care. Dr. Hirst has spoken of air embolism. To prevent this it is necessary to have the fluid running as the canula passes into the vein. The injections are indicated in cases of primary and secondary hemorrhage. I have seen good results, too, in cases of septic conditions, from this intravenous injection of solution. I do not say that the cases would not have recovered without the use of the injections, but with them we have had amazing results. I have operated upon patients almost pulseless, which with the injection showed a pulse of 96. I have used the extrajugular vein, and if there was occasion would not hesitate to use the common femoral. My experience has been very good indeed. I think, could we have the expression of hospital surgeons who see the more desperate cases, all would bear witness to the fact that it is one of the greatest agents that we have. I think an agent which is much overrated is strychnia.

In my experience the best results in intravenous injections have been obtained when the injections are given early.

DR. JOHN H. GIRVIN.—I had the pleasure of seeing this case and of assisting Dr. McReynolds, and I considered it particularly interesting from several points, especially because it presented all the typical symptoms of a ruptured ectopic pregnancy. I was struck particularly with the condition of the abdomen when I saw the woman half an hour before the operation. It was quite characteristic of a collection of blood in the peritoneal cavity. The gestation sac seemed to be formed from uterine tissue completely. There was certainly not more than half an inch of the tube involved in this sac, which seemed to extend out from the cornu of the uterus. For nearly seventy-two hours after the time of rupture the woman's pulse was in good condition for the amount of blood lost.

DR. McREYNOLDS (closing).—In cases of acute hemorrhage I think we get the best results from intravenous injection of salt solution. In cases such as this, where there was bleeding for seventy-two hours, the whole system undergoes a change and the heart has adapted itself to the change. The intravenous injection, then, of a large amount of normal salt solution I think may do harm. It may give a chill and cause death from shock. This, I fear, is what took place in this case.

TRANSACTIONS OF THE WOMAN'S
HOSPITAL SOCIETY.

Stated Meeting, March 26, 1901.

ANDREW F. CURRIER, M.D., *in the Chair.*

KRAUROSIS VULVÆ.

DR. GEORGE TUCKER HARRISON.—The following case presents some points of interest, if for nothing else than on account of its rarity and the obscurity of its pathogenesis.

Mrs. M., a married woman 35 years of age, consulted me on account of narrowness of the vaginal introitus, a disagreeable tension of the skin in walking, and burning sensations referable to the sexual parts. She informed me that several years previously she had undergone an operation for removal of the adnexa. As her husband was a dissolute man, I think it safe to infer that the indication for operation was gonorrheal infection. Inspection showed a narrowed vulva; the parts were hard, stiff, striated, whitish, presenting the appearance of cicatrices. In place of the clitoris was a shallow retraction. The labia minora were flattened, wrinkled, and shrunken. The introitus was greatly narrowed and very sensitive. The skin of the perineum and that surrounding the anus showed a striking formation of folds. The skin of the vulva was so brittle and dry that the simple attempt to introduce the finger into the vagina caused laceration of the tissues. Fat, sebaceous and sweat glands, hairs, blood vessels, and nerves had disappeared.

This disease, first described by Breisky in 1885, is known under the term *kraurosis vulvæ*. Up to the present time we are ignorant of its essential nature. The conjecture of Breisky that a hyperplastic condition preceded the atrophy was elevated to a certainty by the microscopical studies of Orthmann. He found that the stratum mucosum of the epidermis had completely disappeared in some places, so that the horny layer was situated almost immediately on the corium. The papillary body was absent. A hypertrophic process was found in the cortical parts, at the transition into normal tissue. The stratum corium was increased in breadth to a great degree, the papillæ likewise, and, like the corium, infiltrated with small cells. So far as these studies go, it seems safe to assume that before the kraurosis manifests itself inflammatory injury may have preceded, which evoked a cellular hyperplasia; but the destructive process, shown by the microscopic appearances, must be regarded as atrophic. No treatment

seems to offer any relief except that suggested by A. Martin. The five cases published by Orthmann, which were at Martin's private sanitarium, offer encouragement as a result of such treatment. This treatment consists in excision of all the diseased parts. I was unable to adopt this treatment, as the patient passed from my observation.

DR. CURRIER.—All of us are familiar with the appearances in senile atrophy of the vulva, which is not at all uncommon, especially in fat women who have passed the menopause. I have seen several cases of that kind, the phenomena being very similar to those mentioned by Dr. Harrison, but not so distinct as described by Breisky. The history of this case shows the presence of pruritus, and this usually proceeds from an endometritis with acrid discharge from the uterus. This discharge causes an irritation of the mucous membrane of the vulva and even of the adjacent skin, resulting in a parchment-like condition. The annoyance from this irritation is great, particularly at night when the patient is in bed. I have found that glycerin and tannin, with the addition of a liberal quantity of bismuth, makes an acceptable application, softening the tissues and giving relief from the intense itching.

DR. C. R. HYDE.—I recently saw a case of this nature in a gynecological clinic. There was an exceedingly glazed condition of the skin over what was left of the labia, and all that remained of the vagina was a small opening. The labia were practically gone. The symptom complained of mostly was an intense burning, which, the patient stated, extended from the mouth down through the whole body. She came to the clinic for relief from this. She was 55 years old.

HEMORRHAGE INTO THE BROAD LIGAMENT.

DR. C. R. HYDE.—I wish to report an unusual accident which happened during an operation. The patient came to me for operation upon the cervix and posterior wall and an adherent retroversion. A trachelorrhaphy was performed, and during the operation forcible traction was made upon the uterus, as there was considerable hemorrhage. In fact, I have rarely seen a trachelorrhaphy in which the patient bled so freely. After making an abdominal section to suspend the uterus by the Kelly method, I examined the adnexa and found nothing wrong; but as I was introducing the suspension sutures there was noticed a dark-colored mass under the left broad ligament near the pelvic brim; this mass was distinctly intraligamentous. I opened the broad ligament and turned out a recent clot; in fact, the blood was exceedingly fresh. I found two bleeding points, which I tied off, and then closed the incision in the broad ligament with Lembert sutures. The only way in which I could account for this clot was from the undue traction exerted upon the uterus causing a rupture of some blood vessel, which bled between the layers of the ligament. This bleeding would not have been discovered if I had not opened the abdomen to suspend the uterus.

DR. CURRIER.—I suppose this accident happens more frequently than we are aware of, especially when we recall the fragile structure of the veins of the pampiniform plexus.

DR. C. R. HYDE.—The hemorrhage was not from the pampiniform plexus of veins, but at a point where we place the ligature to control the uterine artery in doing a hysterectomy. This point is near the base of the broad ligament where the uterine artery passes into the uterus. There was one spurting artery and some venous oozing. I applied ligatures at three points. At first I thought I had to deal with a ruptured ectopic gestation.

DR. LE ROY BROWN.—During the report of Dr. Hyde's case it occurred to me that, in making traction upon the uterus and excising the diseased portion, if the scar should run over into the broad ligament one of the blood vessels might be cut and might retract, and, in doing so, might bleed within the folds of the broad ligament. To me this seems a feasible explanation.

DR. CURRIER.—Was the section made high up?

DR. C. R. HYDE.—There was not much scar tissue there. In reporting the case I wished particularly to refer to the amount of bleeding. At the time I thought of the possibility of the condition of hemophilia. Even when the suspension sutures were introduced through the fundus considerable bleeding ensued; the patient bled almost wherever the needle punctured. I wonder if the condition of hemophilia had to do with this.

DR. E. E. TULL.—I am reminded of a case occurring five or six years ago when I was assisting Dr. Hanks. A diagnosis of pyosalpinx was made, but the patient refused to have a laparotomy performed, and it was decided to curette her. A curettage was done with the usual care, and not more traction made than was necessary. The patient died within twenty-four hours. The postmortem revealed clots and free pus which resulted from rupture of the pyosalpinx caused by traction upon the uterus. This case impressed me, especially as it is sometimes advised to curette thoroughly before removing a pyosalpinx, and I wondered if such an accident did not happen more frequently than we were aware of.

CASE OF GENERAL ADHESION PERITONITIS, SUPPOSEDLY
THE RESULT OF GONORRHEAL INFECTION SOON
AFTER MARRIAGE.

DR. LE ROY BROWN.—Mrs. M. B. entered the hospital on January 5. She was 27 years old and had been married eight years. She menstruated at the age of 15. Her menses are of the four-week type, with the ordinary flow, but lasting seven days and preceded by much pain and backache. She has had no children and no miscarriages.

Previous History.—She has always been healthy. She is a strong, robust, healthy woman, with a fine color and good physique. Up to eight years ago she was always healthy, but

three weeks after her marriage she had "bad spells." She had inflammation of the bowels and remained in bed several weeks. She came into the hospital because of her pain in the back on both sides of the pelvis. Ordinary examination revealed nothing but a retroverted uterus with adhesions. Dr. Cleveland was present when the examination was made under ether. I opened the abdomen, expecting to find a retroverted uterus with adhesions, but found the intestines, from the diaphragm down, densely agglutinated by a fibrous exudate extending from one coil to another, also to the parietal peritoneum. By pushing the intestines down with sponges I separated the adhesions without the loss of any blood. I suppose the operation lasted fully an hour. The uterus was liberated and placed in an anterior position. I did not attempt to separate the tubes and ovaries, because here the adhesions were more dense. I felt that by separating and suspending the uterus I could give relief from the backache. The patient has been entirely relieved.

In looking up the literature, I am unable to find anything bearing on this subject, excepting in an article by H. W. Cushing in the May number of the *Johns Hopkins Bulletin*. In this article Dr. Cushing has made a thorough study of peritonitis as the result of gonococci. Together with the three cases reported by him, he reports two others, one from Westheim, the other from Bland Sutton. In all the abdomen was opened at the time of the general active peritonitis. In all the gonococci were obtained in abundance and cultivated. Cushing shows conclusively that a general peritonitis can result from gonorrheal infection, and that such peritonitis is not necessarily a mixed infection, as generally supposed. If the case reported originated in an acute general gonorrheal peritonitis, the infection must have taken place three weeks after marriage, since she was never sick before or since this attack. Miller, in *Johns Hopkins Bulletin*, 1900, reports a case of general peritonitis in which the gonococcus alone was obtained in cultures made from the exudates. After discharge the patient was requested to report; she has returned, looks splendid, and complains of no pain or backache. I report this case on account of its rarity and in the hope that the members present may be able to give me more data in reference to such cases. The cases reported by the members of the Johns Hopkins staff were acute.

PARTIAL INTESTINAL OBSTRUCTION AT HEAD OF COLON BY
AN INFLAMMATORY APPENDICULAR MASS; MUCH-DILATED
SMALL INTESTINE; LATERAL ANASTOMOSIS; RECOVERY.

DR. LE ROY BROWN.—In this case a peculiar, though excusable, mistake in diagnosis was made, and a most interesting condition was found afterward.

The patient, Mrs. M. M., an Irishwoman 23 years old, married three years, first menstruated at the age of 17. Her menstruation occurs every four weeks, lasting five days, without pain.

Eighteen months before coming under observation she had one child. She has been in fair health since, excepting that at various times she had pains over the abdomen since the birth of the child. She has had attacks of severe pain, the attacks lasting from four to seven days, sometimes confining her to bed. She came into the hospital on account of a distended abdomen and continued diarrhea. She menstruated just before admission. She complained of pain over the abdomen. The distension was symmetrical.

Examination pointed to free fluid; a point, however, remarked on both by myself and the consultant, was that we could get no fluctuation, though succussion was very marked. Upon opening the abdomen no fluid was present.

The small intestine was enormously dilated; its contents had given the succussion. The site of the appendix was an inflammatory mass the size of a small orange. The large intestine beyond was contracted. With considerable difficulty the mass was separated from the surrounding adhesions. In attempting to unfold it, so to speak, an opening was made into the point of stenosis, situated in the centre of the mass. The stenosis would admit a small pencil. No further attempt to relieve it could be made with any likelihood of success. The opening made was closed as well as possible under the circumstances, and the entire mass cut off from the general cavity by gauze which extended through the abdominal opening. A short distance from this mass a lateral anastomosis was made between the distended ileum and the contracted ascending colon. On opening the small intestine at the seat of the anastomosis a large quantity of the fetid liquid contents of the bowel was drained off. The seat of the anastomosis was attached to the abdominal opening for safety. The secondary closure must be done within a few days, a month having elapsed since the operation. I report this case on account of the peculiar mistake in the diagnosis of what appeared to be a simple condition.

DR. CURRIER.—I should like to ask if the accumulation was in a portion of the peritoneal cavity into which the large intestine had perforated.

DR. BROWN.—The intestine was intact; the ileum was enormously dilated. The stenosis at the juncture of the ileum and cecum was not complete, for the patient had diarrhea. The liquid contents of the small intestine were passing through this small opening. If I had not attempted to relieve the obstruction, but made the lateral anastomosis at once, the patient would have made a much better recovery.

DR. HARRISON.—Where did you make the lateral anastomosis?

DR. BROWN.—Between the small intestine and a portion of the colon.

DR. CURRIER.—I understood the doctor to say that he brought that portion up to the abdominal wall.

DR. BROWN.—I made the anastomosis between the large and small intestines as near the point of contraction as pos-

sible. The intestine was left attached to the abdominal wall, and I could see no objection to doing so. The intestines will be closed, and the fact that they are attached to the abdominal wall will make no difference.

DR. E. E. TULL.—In reference to the first case reported by Dr. Broun, I should like to ask if the patient ran any temperature.

DR. BROUN.—No.

DR. TULL.—The history is certainly peculiar, and I should say that it was a case of tuberculosis. That has been my experience when there has been a general infection. I found tuberculosis of the tubes and ovaries, and even involvement of the intestines far from that point. Nodules were also found.

DR. BROUN.—Nodules were not found in this case.

DR. TULL.—As Dr. Broun pictured the second case it occurred to me that it would have been better to close the median incision and to go into the mass posteriorly, making an opening chiefly through the back. I have done it several times with good results. In this way we get all the drainage necessary.

DR. GEORGE TUCKER HARRISON.—I agree with Dr. Tull that a different method of treatment would probably have been attended with less danger to the patient. I think the first case was simply adhesive peritonitis. I have seen just as extensive adhesions in a case operated upon by Dr. Emmet some years ago. He withdrew from the case and I took charge of it. There were extensive adhesions of an ovarian tumor to all the intestines, stomach, etc. This tumor had burst, and when Dr. Emmet came to remove it, it could only be done piecemeal. As a consequence of these adhesions the wound was not closed up, but drained. I thought she was getting along well, when she developed symptoms of obstruction. Dr. Weir was called in consultation, and it was decided that an operation was necessary. Dr. Weir operated, but could not find the point of obstruction. The patient died, and the postmortem showed that the obstruction was caused by a band of adhesion. A gonorrheal peritonitis is hardly ever general; it is local.

DR. BROUN.—One of the members of the Johns Hopkins staff brought out five cases which were distinctly gonorrheal with a general peritonitis the result of it; this was contrary to the generally accepted opinion.

The second case was reported on account of the peculiar mistake made in the diagnosis. I decidedly differ with the method suggested by Dr. Tull, and do not think he would have followed it if he had been operating.

REPORT OF A CASE OF PROCIDENTIA UTERI.

DR. ANDREW F. CURRIER.—One week ago last Thursday I was called to Sing Sing to operate upon a lady, 55 years of age, who had a complete prolapse of the uterus. The vagina was entirely everted and contained a large portion of the bladder and rectum. There was also a very extensive ulcera-

tion of the posterior vaginal wall. The woman was in very bad general condition, but I deemed it proper to remove the uterus. I separated the vagina from the uterus with the cautery, and then dissected away the bladder, pulled down the uterus, keeping the sound in the bladder to be used as a guide, and finally pulled the uterus sufficiently far to isolate and tie the uterine arteries. I supposed that I would then be able to remove the uterus without trouble. Passing my fingers into the pelvic cavity through the posterior incision, I was surprised at my inability to reach the fundus of the uterus. I also observed that pulling down the uterus caused traction of the abdominal wall. A sound was introduced into the uterus, and it passed one and one-half inches and stopped, as I thought, at the internal os; on using further pressure it went eight inches before it met with resistance. I was then uncertain whether I had perforated the uterus or what might be the exact condition.

By inspection of the abdominal wall I discovered a linear scar. I was then informed by the nurse that the patient had undergone an abdominal operation nine years previously in the Woman's Hospital, the uterus being attached to the abdominal wall. As the vagina prolapsed the uterus was carried down with it, stretching like an elastic band. I removed a portion of the uterus three or four inches in length, passed a purse-string suture around the edge of the vagina, attaching it to the stump of the uterus, so that when the suture was tied it drew up the vagina. This was followed by a plastic operation upon the posterior vaginal wall.

This case demonstrates a rather unusual result of the attachment of the uterus to the abdominal parietes.

DR. BROWN.—I am impressed with how little has been brought out in reference to the influence of ventral fixation in child-bearing women and the danger to them. The fundus of the uterus remaining fixed to the abdominal wall, in spite of all of the movable portions of the pelvis becoming prolapsed, shows with what firmness such a fixation exists and what serious results could happen in such a case that had become pregnant.

We do in Dr. Cleveland's service by preference Alexander's operation; otherwise we suspend, not fix, the uterus to the abdominal wall. Formerly it was the custom to scarify the fundus and run several stitches through and get a comparatively firm, broad band of union.

DR. CURRIER.—The extent of the union of the uterus and abdominal parietes was very apparent, because as I pulled the uterus down a large portion of the abdominal wall was depressed. I am sure it was the uterus, because I passed my finger up as high as I could from the os externum upward, and yet I could not get to the top of it. At first I thought I might have perforated it with the sound. It was extremely interesting to me to know that an unimpregnated uterus could be so distensible and elastic. I did not feel justified in using sufficient violence to tear away the organ from its anchorage.

DR. HARRISON.—Dr. Currier's case may be one of hypertrophy of the supravaginal portion of the cervix; there we have elongation. I do not believe that this is an argument against fixation. Scarifying the tissues I believe to be an absolutely wrong method. The idea is to establish ligamentous union, but not firm union. The argument that ventral fixation is contraindicated in child-bearing women does not hold good in the experience of a number of operators. In a very few cases has any difficulty occurred at childbirth. Kelly advocates ventral fixation, and he has not known of any such difficulty. Fritsch, who has had a great many such operations, stated recently that no difficulty occurred in subsequent confinements. If difficulty is encountered, it is due to the wrong method of performing the operation. I do not agree with the doctrine that ventral fixation will bring on prolapse. In those cases where there is a complete prolapse I would operate upon the anterior and the posterior walls, and then do ventral fixation, and I expect to cure these cases. We may have the difficulty alluded to, and I have seen a similar condition after Alexander's operation where the uterus was drawn out of the vagina, and there was no intravaginal portion of the cervix at all; it looked as though it had been amputated; it was with the greatest difficulty that I could get the anterior lip of the cervix and fix it while I introduced the dilator to perform curettage. When the curette was introduced it went up to the handle. I thought I had gone into the abdominal cavity. This was a case where the uterus seemed to be elongated; it was not a uniformly enlarged organ.

DR. BROWN.—I probably did not make myself plain. I alluded to the method of ventral fixation, of fixing the uterus permanently to the abdominal wall by means of scarifying and otherwise, and sewing with silkworm-gut sutures, which during the past five years has been proved to be an erroneous method in child-bearing women.

Official Transactions.

H. GRAD,
Editor.

REVIEWS.

A TEXT BOOK OF GYNECOLOGY. Edited by CHARLES A. L. REED, A.M., M.D., President of the American Medical Association; Gynecologist and Clinical Lecturer on Surgical Diseases of Women at the Cincinnati Hospital; Fellow of the American Association of Obstetricians and Gynecologists; Fellow of the British Gynecological Society, etc. 356 illustrations. Pp. 900. New York: D. Appleton & Co., 1901.

It is stated in the preface that this work is the product of a

syndicate of well-known authorities in its various departments, but so thoroughly have its contents been fused together, recast, and repolished by its editor that scarcely a trace of its multiple origin remains; it has become essentially Reed's book and bears everywhere the stamp of his individuality. It is not in any way encyclopedic, the method given being only the one most favored. Its style is admirably easy, its statements are clearly and often graphically set forth, and the tendency throughout is to simplify and make broad classifications.

The illustrations are mostly new, well selected, and in general well done. The captions, by a pleasant innovation which we do not recall having seen before in a scientific work, are taken directly from the text. Thus, for example, under Fig. 100, showing the lithotomy position, the caption reads: "The patient is placed upon her back, her legs thoroughly flexed."

The general arrangement of the work departs somewhat widely from the well-worn path usually followed. After the prolegomena and a short chapter on the general etiology of the diseases of women, in which the place of honor is justly given to the gonococcus, the general pathology of the female sexual organs and the general therapeutics of gynecology are broadly sketched. Then come excellent yet brief chapters on the gynecological examination, on sepsis, and on antisepsis. Shock is given a chapter to itself and is differentiated from hemorrhage and acute septic poisoning. Hemorrhage and hemostasis, anesthesia and anesthetics follow, and precede the chapter on abdominal section. Here, in discussing the preparation of the patient before operation, the evil of hypercatharsis is strongly emphasized; the description of the incision and its closure is clear and practical. Chapter xiii., on "The External Organs of Generation in Women," would seem to be better headed "Malformations of the External Organs of Generation," for all reference to the normal anatomy is omitted. Chapters xiv. and xv., on injuries of the external genital organs, include also injuries to the vagina and urinary and fecal fistulæ, and are followed by chapters on infections, skin diseases, and neoplasms of the external genitals. Displacements of the vagina are disposed of in about three pages of text, the author favoring the transverse line of union in the operation for cystocele.

In discussing the important subject of the pelvic floor and its injuries, the author drops from gynecology into obstetrics, and, in this aseptic age, invites criticism when he advocates the shelling out of the child's head "by the aid of two fingers introduced into the rectum." Also, in the immediate closure of a perineal laceration he says: "The vagina should be carefully irrigated, preferably with lysol or carbolic acid solution." Why not, as we wish to do the least harm to the exposed raw surfaces, with the physiological normal salt solution? In the ordinary repair of an incomplete perineal laceration Emmet's operation is favored, the author preferring to

use the buried catgut suture. In the closure of a complete tear the modified Tait operation is advised. In the treatment of displacements of the uterus the pessary is dismissed with a paragraph, surgical methods being favored in practically all cases. The author, in writing of the treatment of posterior displacements, says: "Alexander's operation unquestionably fulfils the indications in a large majority of simple cases. Where adhesions have occurred, if they are slight, they may be broken up through a vaginal incision and Alexander's operation done afterward. In view of the excellent results obtained by this operation, the opening of the abdomen for ventral fixation alone is scarcely warranted in simple cases. Where the abdomen is opened, and the tubes and ovaries left in such a condition that pregnancy may occur, then the intra-abdominal shortening of the round ligaments would seem to offer better chances of permanent cure without interference with gestation. If serious disease of the tubes and ovaries exists, then either the abdomen must be opened or the vaginal operation done, as the operator may elect. For an operator with small experience the abdominal operation unquestionably offers the fewer obstacles. For those skilled in vaginal work the vaginal operation causes the woman the least trouble and annoyance. Where the abdomen is opened for other cause and pregnancy is rendered impossible, either by disease, age, or the operation, then ventral fixation would seem to be the simplest and easiest of performance and to give promise of equally good results. Vaginal fixation has found little favor in this country, and, in view of the great difficulties encountered where pregnancy has followed, should never be done in women liable to become pregnant. The tendency in this country, even among those who have been its advocates, seems to be to substitute some other form of operation for it."

The treatment of prolapsus receives but scant attention and is not altogether satisfactory. The section on infections of the uterus is in general very good, though the treatment of streptococcic (puerperal) infection, as advised, will certainly be held too radical by many. The chapter on Cesarean section is excellent. Infections of the Fallopian tubes are treated broadly and clearly, as are also infections and neoplasms of the ovaries and of the broad ligaments. Chapters on menstruation, on the disorders of the urinary apparatus, and on the rectum complete the work.

ECZEMA: With an Analysis of Eight Thousand Cases of the Disease. By L. DUNCAN BULKLEY, A.M., M.D., Physician to the New York Skin and Cancer Hospital, the Randall's Island Hospitals; Consulting Physician to the New York Hospital, etc. Third edition. Pp. 368. New York and London: G. P. Putnam's Sons, 1901.

An endeavor is here made to present to the general practitioner a clear guide to the recognition and management of

eczema. The work is largely a personal one, and presents those points in diagnosis and treatment which the author's vast experience has proved important. Much attention is given to the differential diagnosis, therapeutics are minutely considered, and considerable space has been given to diet and hygiene.

CHRONIC URETHRITIS OF GONOCOCCIC ORIGIN. By J. DE KEERSMAECKER. Chief of Service, Diseases of the Urinary Organs, at the Centralklinik of Antwerp, and J. VERHOOGEN, Agrégé at the University of Brussels, etc. Translated and edited with notes by LUDWIG WEISS, M.D., Attending Physician to the Genito-urinary and Skin Service, German Poliklinik, etc. Pp. 263. New York: William Wood & Company, 1901.

This is an exposition of the treatment of chronic gonorrhea based upon the exact information obtained by the skilled use of the urethroscope, the author claiming that every case of chronic urethritis where the lesions of the mucous lining of the canal are solely of gonococcic origin can surely be cured. Dr. Weiss has filled gaps in the original work by the incorporation of chapters on palpation and expression of Cowper's, the prostate, and the seminal glands, and in certain details in the treatment of chronic gonorrhea, urethral asepsis, and the question of gonorrhea and marriage. His endeavor is to make urethroscopy available to the general practitioner.

THE FEEDING OF INFANTS. A Home Guide for Modifying Milk. By JOSEPH E. WINTERS, M.D., Professor of Diseases of Children, Cornell University Medical College. New York: E. P. Dutton & Co., 1901.

The author gives a number of formulæ for preparing milk of various percentage strengths and hints as to the care of bottles, time for feeding, heating, list of equipment for home modification, and remarks on infant foods in general.

TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY. Volume XXV., for the year 1900. Pp. 454. Philadelphia: William J. Dornan, Printer, 1900.

The contents of this volume are already well known to our readers, as nearly all the papers have appeared in this JOURNAL, either in full or in abstract. The book is remarkable, even considering the high standard of its predecessors, for the number of its full-page plates and for the exceptional excellence and value of many of the included papers.

THE MEDICAL VEST POCKET FORMULARY FOR 1901. By E. QUIN THORNTON, M.D., Demonstrator of Therapeutics, Pharmacy, and Materia Medica in the Jefferson Medical College, Philadelphia. Third edition, revised and enlarged. Philadelphia and New York: Lea Brothers & Co., 1901.

In the preparation of this third edition opportunity is taken

to introduce a number of formulæ, including old drugs in new combinations, and all of the newer remedies which by experience have been proved valuable.

INTERNATIONAL MEDICAL ANNUAL. New York: E. B. Treat & Co., 1901.

This is one of the best as well as the most concise and cheapest of the medical annuals. That it is practical and well liked is proved by the fact that it continues to flourish in spite of its many imitators and rivals.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Spontaneous Delivery with Contracted Rachitic Pelvis.—J. Valency¹ has collected 233 cases of contracted rachitic pelvis, in 161, or 69 per cent. of which spontaneous delivery occurred. This he found took place in 78 per cent of the cases with a diagonal conjugate of 10.6 to 11 centimetres; in 68 per cent of those where it was 10.1 to 10.5 centimetres; and in 34 per cent of those in which it measured from 9 to 10 centimetres. His practical conclusion is that hasty intervention is inadvisable. A favorable termination in these cases demands: no disproportion between the size of the fetal head and the pelvis; regular and energetic uterine contractions; absence of any cause preventing dilatation of the cervix; and lack of serious obstruction by the soft parts, especially the levator ani and vulvar orifice.

Ectopic and Uterine Pregnancy.—W. Straus² diagnosed before operation a ruptured ectopic gestation with a probable uterine pregnancy of twelve weeks. This was confirmed and the lacerated adnexa removed. Thrombosis of the right femoral vein followed, and later a fourteen weeks' fetus was expelled from the uterus. Thrombosis of the other femoral occurred and then death from pulmonary embolism.

Vasa Previa.—During the first stage of labor H. Peters³ was able to detect the presence of a pulsating vessel, nearly the size of the little finger, running across the bag of membranes, while the occiput was posterior. The woman was placed upon her right side in order to reduce the pressure of the head and favor rotation. When the cervix was dilated the membranes were ruptured at some distance from the vessel, and a face delivery followed without injury to the vessel. A thin layer of placental tissue was found extending to the point of insertion of the cord.

Dystocia Due to Polycystic Liver.—A case of this unusual complication is reported by Porak and Couvelaire,⁴ who were obliged to tap the abdomen in order to effect delivery. The abdomen was distended by an enormous cystic liver. Both

kidneys were also cystic, and there were many malformations—exencephalus, achondroplasia, harelip, supernumerary fingers and toes, rudimentary external genitals, etc.

Death from Hemorrhage from the Cord.—Lepage and Grosse ' describe a case of death of the fetus from hemorrhage due to laceration of the umbilical vessels at their point of ramification upon the placenta. The cord was 39 centimetres long, and was made relatively shorter by a turn around the neck.

Retroflexion and Retroversion of the Gravid Uterus.—H. Keitler ' insists that backward displacement of the pregnant uterus may occur from a change in position of a previously anteфлекed organ as well as in one retroflexed or retroverted before gestation. Retroflexion may result in retroversion, and *vice versa*. Differentiation of these positions is essential, as spontaneous reduction of a retroverted uterus is not to be expected, and active treatment is more imperative than for retroflexion. Cases of retrodeviation with a very short vaginal portion of the cervix, or only an external os with the os directed forward and upward, possess the practical significance of a retroversion. The resulting retention of urine must not be treated by sudden complete removal of the contents of the bladder, whether these are infected or not. The so-called hemorrhage from creation of a vacuum is always a sign of beginning necrosis of the bladder.

Osmotic Pressure of Maternal and Fetal Blood.—Krönig and Fueth ' have conducted a series of experiments upon maternal and fetal blood, and find that at the end of the period of expulsion their osmotic pressure is equal.

Auto-Cesarean Section.—This remarkable case is vouched for by R. Löffler. ' The woman, 42 years old, had been ill and was afraid that she might die before giving birth to her child. She opened the abdominal wall and uterus with a pocket knife, and then fainted. After removing the child and placenta her young daughter closed the abdominal wound, at her direction, with a rusty needle and hemp thread. Primary union of the sixteen-centimetre incision followed.

Transverse Incision of Fundus in Cesarean Section.—K. Holzapfel ' shows that it has been proved by anatomical investigations that the situation of the placenta is usually such that the transverse incision of the fundus is less likely to wound it than the usual anterior longitudinal section. The fact that the placenta is more often injured by this incision than these researches would tend to indicate suggests the idea that the operators reporting such cases have not carried the wound directly through the fundus and so have encountered the border of the placenta. It is true, at least, that complete division of the placenta occurs less frequently than by the old incision.

Hydatidiform Mole and Deciduoma Malignum.—P. C. T. Van der Hoeven ' states that the syncytium is the fetal ectoderm and Langhans cells the somatopleura, and in normal pregnancy these cells vary between the characteristics of normal cell growths and of malignant development. In the mole they

grow into the maternal tissue and increase in number. If not removed with the mole they continue to develop in the maternal tissue and form the so-called deciduoma. This is composed of syncytium, syncytium with Langhans cells, Langhans cells alone, or both these with stroma from the villi. Deciduoma may also originate from the normal placenta in which single cells show a tendency to abnormal development. Many so-called cases of deciduoma are possibly only sarcomata of the uterus not connected with pregnancy.

Vaccination during Pregnancy and Puerperium and of the New-born.—As the result of the study of seventy cases. H. Palm' finds no unfavorable results following successful vaccination during the last four months of pregnancy or the puerperium. That immunity is not conveyed to the fetus *in utero* by inoculation at from four months to six days before delivery is shown by the susceptibility of the child to vaccination after birth. Inoculation of the new-born, even if premature or artificially fed, is free from danger. For this reason the writer advises this procedure when exposure to variola is likely to occur, but not as a general rule.

Postpartum Inversion of the Uterus.—E. Gilbert " reports the occurrence of inversion of the uterus after two labors of the same patient. One hour after her fourth normal labor she went down-stairs and carried up two pails of water on her shoulders. Inversion of the uterus occurred and was easily reduced. There was no hemorrhage. Two years later, after a normal labor, severe hemorrhage and inversion of the uterus occurred and the patient died. No history of any cause for the accident. The writer holds that postpartum inversion rarely results from traction upon the cord, but is dependent upon uterine atony.

Two other such cases are recorded by A. Fleischmann." The first was a primipara. Spontaneous birth followed by uterine atony with hemorrhage. Stimulation of the fundus was ineffectual, and application of Credé's method of expression of the placenta resulted in complete inversion. The second case, a IVpara, had a spontaneous birth, also followed by hemorrhage. During traction upon the cord this was torn off close to the placenta and inversion of the uterus occurred. In both cases the placenta was detached and the uterus then reinverted. Fleischmann favors this rather than immediate replacement and subsequent extraction of the placenta, as it is easier, causes no greater hemorrhage, and avoids the danger of a second inversion while removing the placenta. In both cases atony of the uterus was the fundamental cause of the accident.

Acetonuria of Pregnancy.—R. Scholten " finds that while a trace of acetone occurs in all normal urine, an appreciable acetonuria is very rare during pregnancy, this being found in but three of thirty-nine cases. In thirty-one of thirty-eight cases, however, it was found within the first two days after labor, usually disappearing on the third, and depending in

intensity upon the duration of labor and severity of the uterine contractions. Acetonuria is nearly always found during labor. The presence of acetone is due to incomplete oxidation of albuminoids.

Spontaneous Recovery from Extrauterine Pregnancy.—

In a case observed by A. Kupffer¹² the woman, who gave a history of symptoms of ectopic gestation ten years before, complained of rectal tenesmus without a movement of the bowels. The writer removed several bones of a fetus. A few days later this was repeated, and complete recovery followed.

Slight Fever in the Puerperium.—Franz¹³ holds that slight rises of temperature during the puerperium are usually due to saprophytes, which cause such fever only when the lochial discharge is obstructed. They are probably the saprophytes normally present in the vagina. Internal examinations aid their action only by causing local injury of the vaginal wall, thus furnishing a point of entrance. Primiparae are much more subject to such febrile reactions than multiparae.

Antistreptococcic Serum.—Scharfe¹⁴ bases his paper on the value of antistreptococcic serum upon 2 cases of erysipelas during pregnancy and 5 of streptococcus puerperal infection, in which a favorable result was obtained; 1 case, probably of mixed gonorrheal infection, in which the serum apparently was effectual; 2 cases in which the reaction after the injections seemed to indicate the presence of streptococci; and several in which the serum failed. Scharfe concludes that the serum cannot be claimed to have any obvious effect on puerperal infection, for the successes are counterbalanced by three absolute failures in pure streptococcus puerperal infections, and in some cases as good results were obtained by other means as by the injections. As the reaction is often absent, the serum is not reliable as a means of diagnosis. It appears, however, to be of prognostic value, as those cases in which the pulse and temperature fell rapidly within twelve to thirty-six hours after the injection recovered rapidly.

Atresia of the Vagina; Abortion through Anus.—Zmitrowicz¹⁵ has seen a woman who had had one difficult but spontaneous labor three years before. She gave no history of disease or lesions of the genitals. When seen she was in labor; the vagina was closed by a cicatrix about two centimetres from the vulva. Before this could be incised blood appeared at the anus, which dilated, revealing the membranes and a lower extremity. A fetus twenty-six centimetres long was extracted. The recto-vaginal fistula and atresia of the vagina probably followed the previous labor, and coitus must have taken place through the anus.

GYNECOLOGY AND ABDOMINAL SURGERY.

Uterus Didelphys.—A patient of C. Jacobs,¹ 22 years of age, began to menstruate at 17 and had increasing pain at each period. After vaginal puncture and drainage in 1898 she had a purulent discharge. Examination showed a condition which

appeared to be an old suppurative inflammation of the right appendages, with intestinal adhesions, vaginal fistula, and atrophy of the genitals. Operation revealed a uterus didelphys. The left uterus was small and opened into the vagina. The right uterus was large, with the cervix dilated and opening into a dilated vagina, which was closed at the lower end. The cervix and vagina were filled with pus. The small left uterus had been supposed to be an atrophied uterus, and the dilated right uterus and vagina a pus tube. Recovery followed total abdominal extirpation.

Relation of Mental Development to Puberty.—G. J. Engelmann^{*} has collected statistics of the time of appearance of menstruation in 12,000 American girls. These show that mental influences preponderate in advancing the period of onset of the menses. The age varies from 13.5 years for the college student to 14.27 years for the laboring classes. He notes the earlier appearance of the flow in the French in Canada than in those in France, and attributes this to the more nervous character of life on this continent.

Cutaneous Emphysema after Laparotomy.—M. Madlener^{*} shows that this harmless complication occurs most frequently after the employment of the Trendelenburg position. This admits a large amount of air to the lower part of the abdominal cavity, and, unless the horizontal position is resumed before suturing, it is enclosed in the abdomen and subsequently is forced out until the loose subcutaneous tissue is reached.

Hereditary Transmission of Tuberculosis.—A number of experimental studies upon animals are published by F. F. Friedman.^{*} They show that tubercle bacilli introduced into the vagina with semen can be transmitted directly to the embryo without involvement of the mother.

Papillary-polypoid Angioma and Fibroma of the Urethra.—Under the title papillary-polypoid angioma, R. Palm^{*} discusses all the reported cases of the lesion known as urethral caruncle and by many other names. He also treats of fibromata, fibromyomata, and myomata of the urethra. The paper is an exhaustive compendium of the literature and contains an extensive bibliography, but is not suitable for condensation.

Ovarian Cyst.—F. Brunner^{*} has removed one of the largest recorded ovarian cysts from an unmarried woman 44 years of age. The tumor originated in the right ovary and had undergone malignant degeneration. It contained 60½ litres of dark-brown fluid and weighed 70 kilogrammes. The abdominal circumference was 168 centimetres. Death occurred three months later.

Abnormal Epithelial Growths in the Uterus of Children.—E. Höhl^{*} has found, in the upper and middle thirds of the uterine mucosa of three children, islands of flat epithelial cells upon a basement membrane rich in elastic fibres. He considers them as abnormal remnants of the upper portions of Müller's ducts.

Pseudo-intraligamentous Ovarian Tumors.—F. Schenck^{*}

illustrates this character of lesion by the description of a case of apparently intraligamentous tumor of one ovary in which the encapsulated condition of the other suggested that both glands were merely enclosed by old inflammatory exudate.

Carcinoma of the Uterus.—E. Puppel¹ has observed, in the microscopic study of nine cases of cancer of the uterus, the extension of the growth from the vaginal portion of the cervix by the lymph channels to the parametrium, while the body of the uterus is only subsequently involved by way of lymphatics not connected with the course of the blood vessels. From these investigations he is impressed with the possibility of removing the diseased area in early cases by supravaginal amputation. In advanced cases total hysterectomy with careful removal of adjoining tissues is necessary.

Twenty-nine cases of carcinoma of the uterus submitted to radical operation form the basis of a paper of E. Wertheim.² Microscopic sections of the tissues removed showed that in a large number of cases glandular involvement occurs at a very early period. Frequently this can be determined only by microscopic examination after their removal. Palpation of the parametrium does not furnish a sure guide to the condition of the lymphatic glands or of the tissues adjacent to the uterus. An apparently normal parametrium may contain the malignant growth, while marked thickening may be due simply to interference with the pelvic circulation. Wertheim advises the technique which he has followed: abdominal incision, isolation of ureters and bladder, ligation and division of the round, infundibulo-pelvic, and sacro-uterine ligaments, ligation of the uterine arteries, and further freeing of the ureters. The uterus with adnexa, ligaments, and intervening tissues are excised together, except at the vaginal attachment; all remaining lymphatic glands are removed. The vagina is freed from its surroundings, but not opened. After pushing down the loosened organs the peritoneum is united above them and the abdomen closed. The vagina is then amputated and, together with the attached internal genital organs, is drawn down and out through the vulva. Ten deaths resulted from the twenty-nine operations; the remote results in the others are yet unknown. The writer discusses at length many points in the operation.

Salpingo-oöphoritis Without Symptoms.—Bégouin and Anderodias³ report a case of salpingo-oöphoritis which had given no symptoms until a sudden attack of pelvic peritonitis led to operation. A pyosalpinx on the left side and a hydrosalpinx on the right, with perisalpingitis, were discovered. No rupture of the tube had occurred, and the peritonitis was evidently from simple extension of the inflammatory process. No signs of tuberculosis of the tubes could be found.

Treatment of Operable Cancer of the Uterus during Pregnancy.—F. Legueu⁴ favors total abdominal hysterectomy, but would postpone the operation for a short time if near the period at which the fetus becomes viable.

Formation of the Placenta.—K. Winkler¹ concludes from his study of the placental tissues at various periods that the syncytium arises from the maternal decidua, the Langhans cells from the fetal ectoderm. After the middle of pregnancy both begin to disappear, and at the end only a few of the syncytial cells remain. Hyaline degeneration of the villi and other portions is of real importance in connection with the separation of the placenta.

Operative and Non-Operative Treatment of Rupture of the Uterus.—This paper, by R. Klien,² is an exhaustive statistical study of 367 previously published and 14 new cases, considered from all points of view. Of 347 uncomplicated cases 149 were treated by operation, with a mortality of 44 per cent; 198 were not operated upon and 52 per cent died. The highest mortality, 73 per cent, was among the 70 of the last class in which no treatment whatever was employed for the rupture. The rest of the non-operative class included 125 treated by drainage, tamponade, or irrigation, with 39 per cent of deaths. The 42 cases of drainage showed only 17 per cent mortality, hence Klien warmly advocates as a rule for all cases, whatever the circumstances, drainage by rubber tubing; and only when bleeding to death is threatened, immediate operation without removing the patient from the place where the rupture occurred. This class of operative cases shows a mortality of only 16 per cent. The writer also discusses the complicated cases.

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DISEASES OF CHILDREN.

Abscess of the Liver from Contusion.—C. Oddo¹ describes a case, and from a study of other cases reported concludes that while abscess of the liver is rare in childhood, traumatic abscess following contusions is relatively more frequent than in the adult, this being probably due to the more frequent occurrence of abdominal traumatism in early life. The symptoms may come on at once or remain latent for some time after the injury is received. As a rule the traumatism is directly on the hepatic region, and the abscess is primary and direct; but in rare cases the blow may have been on some other part of the abdomen and the abscess be secondary and indirect. The symptoms of traumatic abscess in children are local pain, the presence of a bulging, fluctuation, etc., with remittent or continuous fever, and cachexia. The abscess tends to open through

the skin or through the respiratory passages into the bronchi; it may indirectly produce a purulent pleurisy or a subdiaphragmatic pyopneumothorax. Evacuation is usually followed by rapid improvement, but a radical cure can be obtained only by surgical intervention.

Acute Appendicitis.—M. E. Kirmisson¹ is a decided advocate of the expectant treatment in cases of acute appendicitis. Rest in bed, absolute abstention from food, ice on the abdomen, and opium internally form a valuable method of treatment. The important question is whether it should be applied in every case and throughout the attack. Appendicitis has to be considered both as regards its mechanical phenomena and its infectious nature. As to the first, they may be summed up in the one fact that, the appendix being free in the peritoneal cavity, any lesion affecting it may be communicated to the peritoneum, inducing more or less dangerous peritonitis. Medical treatment, by securing absolute rest to the intestines, favors encysting of the lesions and may prevent diffusion of inflammation. On the other hand, however, appendicitis being an infectious disease, the prolonged constipation produced by opium has the effect of retaining infective substances whose diffusion in the organism may cause grave results, such as fatal hematemeses. The author, therefore, gives opium only until the acute symptoms have disappeared, after which he has an oily injection administered, to be followed daily by injections. Feeding is begun very gradually by the ingestion of a few teaspoonfuls of milk, to be increased or suspended according to indications.

Appendicitis Due to Worms.—M. Metchnikoff¹ reports a number of cases diagnosed by competent physicians as appendicitis, in which an examination of the patient's dejecta showed the presence of the ova of the ascaris and the trichocephalus. Anthelmintics caused a cure. The author therefore holds that in suspected cases of appendicitis it would be well always to examine the fecal matter for worms, to give santonin for the ascarides and thymol for the trichocephalus, to forbid the eating of raw vegetables, strawberries, etc., or the drinking of non-boiled, non-filtered water. As a preventive measure, the feces of children should often be examined and vermifuges administered.

Blood Infections in Nursing Infants.—Marcel Delestre¹ has found, as a result of his researches in the Hospital of the Enfants-Assistés, that prematurely born infants are especially sensitive to the action of the streptococcus and the bacterium coli, and less so to that of the staphylococcus, the latter, however, having a marked influence on infants a few months old. These blood infections, which occur in 73.5 per cent of nursing infants, gradually diminish with increasing age until at 5 years they are extremely rare. According to Hutinel, the intestinal and pulmonary mucous membranes in the newly-born are large and badly defended surfaces of absorption; the umbilical wound is also a source of germ infection. The author was sur-

prised to find that whenever he removed a little blood from the sick infants for purposes of observation a temporary but marked improvement of the general condition followed. In one case a child supposed to be dying recovered completely. As a consequence, he has since that time used bleeding as a therapeutic measure, with excellent results. From 2 to 3 cubic centimetres, or in more severe cases 15 to 20 cubic centimetres, may be removed in infants weighing from 1,800 to 2,000 grammes, and from 20 to 30 cubic centimetres of artificial serum should be at once injected. The bleeding appears to stimulate the activity of the hemato- and lymphopoietic organs, to whose insufficiency at an early age the author is inclined to attribute the lack of defence against micro-organisms.

Burns in Infancy and Childhood.—Charles Warren Allen¹ finds aromatic spirits of ammonia useful to meet the indications of sudden vital depression and shock. Unless the child be too young for the drug to be used at all, opium in appropriate doses may be used to quiet the system. Picric acid is the best drug for local application in burns of the first and second degrees. In a one per cent watery solution it gives almost immediate relief from pain, and healing takes place rapidly. After the burned area has been coated once or twice with the solution a thin layer of absorbent cotton may be applied dry, over this a layer of impervious tissue, then cotton for warmth, protection, exclusion of air and germs, and a loose bandage. At subsequent dressings all may be removed except the layer next the skin, which may be made wet with the picric solution. The pain of erythematous areas may be greatly relieved by local baths containing nitrate of potassium or bicarbonate of sodium in saturated solutions. Water blisters may be carefully cut at the edge, and a layer of cotton soaked in a saturated solution of potassium chlorate, to which a little glycerin is added, may be applied. In deeper, extensive burns a permanent bath of either a single limb or the whole body secures comfort and wards off a fatal issue. The degree of warmth should be kept pretty constant. Exuberant granulations should be brushed with strong nitrate of silver solution. Carron oil is soothing, and to this may be added some antiseptic, as boric acid powder five per cent, or thymol 1:1000. An important point is to refrain from removing the dressings; the layer of gauze, cotton, or cheese-cloth next the wound can be wet with the solution used. This greatly lessens chances of infection as well as of irritation.

Congenital Ptosis, An Easy Operation for.—Freeland Fergus¹ makes a horizontal linear incision in the eyebrow along its whole extent, choosing this situation because the hairs of the eyebrow afterward completely hide the scar. With a few strokes of a scalpel the skin is completely separated from the underlying tendon and fascia of the occipito-frontalis muscle to a distance of about two inches above the horizontal wound. In the opposite direction the skin and fascia and portions of the muscular structure are separated from the orbicularis muscle

and from the tarsus, the division being carried almost to the free margin of the eyelid. The next step is to mark out a vertical band of the tendon and fascia of the occipito-frontalis, about three-quarters of an inch broad and two inches long. This is dissected up from all underlying structures, and when the dissection is complete its only attachment is to the occipito-frontalis at the part furthest away from the skin incision. The end of the band is drawn down into the upper eyelid, and its margin secured by catgut sutures as near the margin of the lid as possible.

Constipation in Children.—John H. Byrne^{*} urges a thorough investigation of the cause of the condition, enumerating eighteen conditions which might bring about defective intestinal action. As to treatment, nothing can be accomplished without establishing a regular habit. In children not old enough to initiate the muscular effort, a slight stimulus in the rectum is required, and is best supplied by a suppository of glycerin or an injection of glycerin and tepid water. When the seat of trouble is higher up in the colon, an enema of olive oil is a good remedy. Should the sphincter need dilating, the finger may be introduced into the rectum; this will stimulate peristalsis, and by straightening out some folds of the sigmoid facilitate the descent of feces. In muscular debility strychnine and nitric acid are perhaps the best. If food is absorbed too quickly, oatmeal water should be given. Bicarbonate of sodium added to drinking-water will prevent it from being entirely eliminated by the kidneys instead of by the bowel. If the milk ingested is low in fat and high in proteid, cream should be given with water and sugar after nursing. In torpor of the bowel massage is of value. For protracted constipation high injections with glycerin, soap, or salt added to the water, or with olive or castor oil. An acid condition of the gastric and intestinal contents calls for calcined or carbonate of magnesium, or rhubarb and soda, or Gregory's mixture. If the discharges are coated with mucus, we can give podophyllin dissolved in alcohol, one-twenty-fourth to one-fortieth grain, or phosphate of sodium with orange juice added. In obstinate constipation extract of belladonna, one-twenty-fourth to one-thirty-second grain, with the podophyllin, or calomel in small doses, and castor oil rubbed into the abdomen, will often answer well. In older children habit, careful massage, enemata in commencing treatment, exercise, fruits and vegetables, oatmeal, cream, eggs, milk with water and cream added, meat broths, graham bread, or crackers are the chief points of the cure. Coffee and tea are to be prohibited. In rachitis, anemia, or general nerve weakness cascara and nux vomica are good. In atonic dyspepsia give belladonna and hyoscyamus. Calomel is valuable as an anti-septic and occasional purgative to relieve the intestinal tract of indigestible material.

Diseases Due to Growth.—Marie Derscheid-Delcourt¹¹ reports five cases of affections due to growth. The first two are cases of pseudo coxalgia, the second osteitis of the tibia, the

fourth a pseudo-Potts, and the fifth abdominal striae like those of pregnancy. Every symptom pointed to the affections mentioned except the last, but the rapid recovery of the patients under treatment showed the true nature of the troubles. In cases of osteitis it does not do to count on spontaneous resolution, but treatment should be the same as if there were grave inflammatory trouble.

Epidemic of Abdominal Influenza among Children.—William B. Young "holds that in Bon Air, Tenn., there are more gastro-intestinal diseases in summer than in any town of the same population in the State. This he ascribes to the inaccessibility of the town, the poor soil, the lack of interest in gardening on the part of the inhabitants (coal miners), the more or less decomposed condition of vegetables and fruits brought from the plains below, and the lack of cellars and refrigerators. The milk is not well preserved. In the autumn and winter there have not, as a rule, been an unusual number of cases of gastro-enteritis, but from January 1 to April 1 last the author treated more cases than during the entire spring and summer seasons of any previous year. The symptoms were similar in all. The attacks began abruptly in previously healthy children, and consisted of abdominal pains, vomiting, and diarrhea. The attacks lasted in some cases for six weeks. Two cases were complicated by pneumonia. Usually only one child in a family would be attacked at first, then in from a few hours to a few days every child in the household would have the same trouble. The writer is at a loss to account for the epidemic, unless it was produced by the germ of influenza. The factors of summer diarrhea can be excluded. Treatment consisted of a laxative, usually a tablet of calomel, one-fifth of a grain; ipecac, one-tenth; and soda, one grain. To the children who could not take food or drink without vomiting, one-twentieth to one-fourth grain of dry calomel was given on the tongue, repeated every hour until from one to two grains, according to age, had been taken. It acted like a charm by allaying the irritability of the stomach. Food and drink were prohibited, and thirst was allayed by enemata of normal salt solution. After the action of the laxative, subnitrite or subgallate of bismuth and salol were given. Morphine was given in a few cases to relieve severe pain. The mortality was light, only one case (complicated by pneumonia) out of 50 typical cases. No child had a second attack.

Imbecile Children.—An editorial "calls attention to an institution in Ireland in which idiot children, chiefly from the small farmer class, are educated in farm work, so that on the termination of their five years' training they are often helpful to their relatives. This institution furnishes a great object lesson to those who wish to benefit the mentally deficient. Little by little the poor weak mind, freed from worry and occupied by the observation of natural objects, gains strength and finds pleasure in natural employment. Even the most backward children, who utterly fail to acquire any clerical know-

ledge, learn to do field work and follow some simple industry such as mat-making. Shut up in asylums with adult lunatic companions, these imbecile children are apt to become vicious, treacherous, vindictive, and cruel. The writer urges the investment of public money to secure the open-air life for unfortunate children of weak intellect.

Inheritance of a Gouty or Uric Acid Toxemia in Children.—Carl N. Brandt¹¹ has observed 57 cases of children between the ages of 1 and 13 years who gave diverse manifestations of the retention of uric acid, such as eczema, indigestion, urticaria, pharyngitis, tonsillitis, joint inflammation, nasal catarrh, asthma, conjunctivitis, and dental caries. The noticeable points were, first, that in all the cases an age had not yet been reached when it is probable the case could have acquired gout or uric acid toxemia; secondly, that in each case either one or both parents gave histories of uric acid poisoning; thirdly, that the cases in which there was a paternal history were just 100 per cent greater than those with a maternal history. The individual histories of the children showed that so long as they were properly fed and given plenty of physical exercise, so long they remained well; but the moment any indiscretion in diet, etc., was allowed, they developed a condition in which uric acid retention could be demonstrated, and which yielded promptly when the normal uric acid excretion was again established.

Living Animal Organisms in the Ear.—Francis R. Packard¹² says that as a rule any animal within in the ear may be killed and its remains removed by proper syringing with rather a strong solution of carbolic acid in warm water. In some instances merely holding a light in front of the external auditory meatus has served to attract the insect and cause it to make its way out, but the best way to produce relief is to flood the meatus with warm water or oil. C. H. Burnett recommends the use of chloroform through the meatus. Dr Blake removed the maggots from a suppurating ear by holding a sponge saturated with ether at the external meatus. This caused all the maggots to wriggle out from the canal. Sometimes examination with a speculum has failed to reveal the presence of anything abnormal within the ear, and yet syringing will remove an insect.

Multiple Sclerosis.—P. Sorgenti¹³ concludes a detailed study of a case and of the disease as follows: Multiple sclerosis may be met with in childhood, although rarely. It has been noticed as early as the fifth month. It may occur in the classic type, or atypically or abortively, but the clinical picture is the same as in adults. Infectious diseases, eruptive ones in especial, have a marked etiological influence in the production of multiple sclerosis. Syphilis may also be a cause of the disease. Recovery from multiple sclerosis is possible only when syphilis is the cause, or when the lesion of the nerve cells is not too severe to permit of their restoration. Antisyphilitic treatment is therefore the only one which can give any hope of cure, and should always be instituted, even when the existence of syphilis is unknown or unsuspected.

Mumps in Pneumonia; Boroglyceride.—Charles W. Dulles¹ reports a case of mumps occurring during pneumonia, in which the treatment adopted was the application of a fairly thick compress of surgical gauze saturated with boroglyceride and covered with a layer of paraffin paper and just enough bandage to keep it in place. There was great relief of pain and subsidence of swelling. The author uses boroglyceride in place of poultices in the case of incipient boils and carbuncles, and since using it has never had to apply the knife. He has also found it useful in inflammatory swellings below, but near to, the true skin.

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ITEM.

It is announced that the dates of the next meeting of the **MISSISSIPPI VALLEY MEDICAL ASSOCIATION** have been changed from the 10th, 11th, and 12th of September to the 12th, 13th, and 14th of September. This change has been made necessary because the dates first selected conflicted with another large association meeting at the same place.

Full information as to rates can be obtained by addressing the secretary, Dr. Henry E. Tully, No. 111 West Kentucky street, Louisville, Ky. Members of the profession are cordially invited to attend this meeting.

Those desiring to read papers should notify the secretary at an early date.

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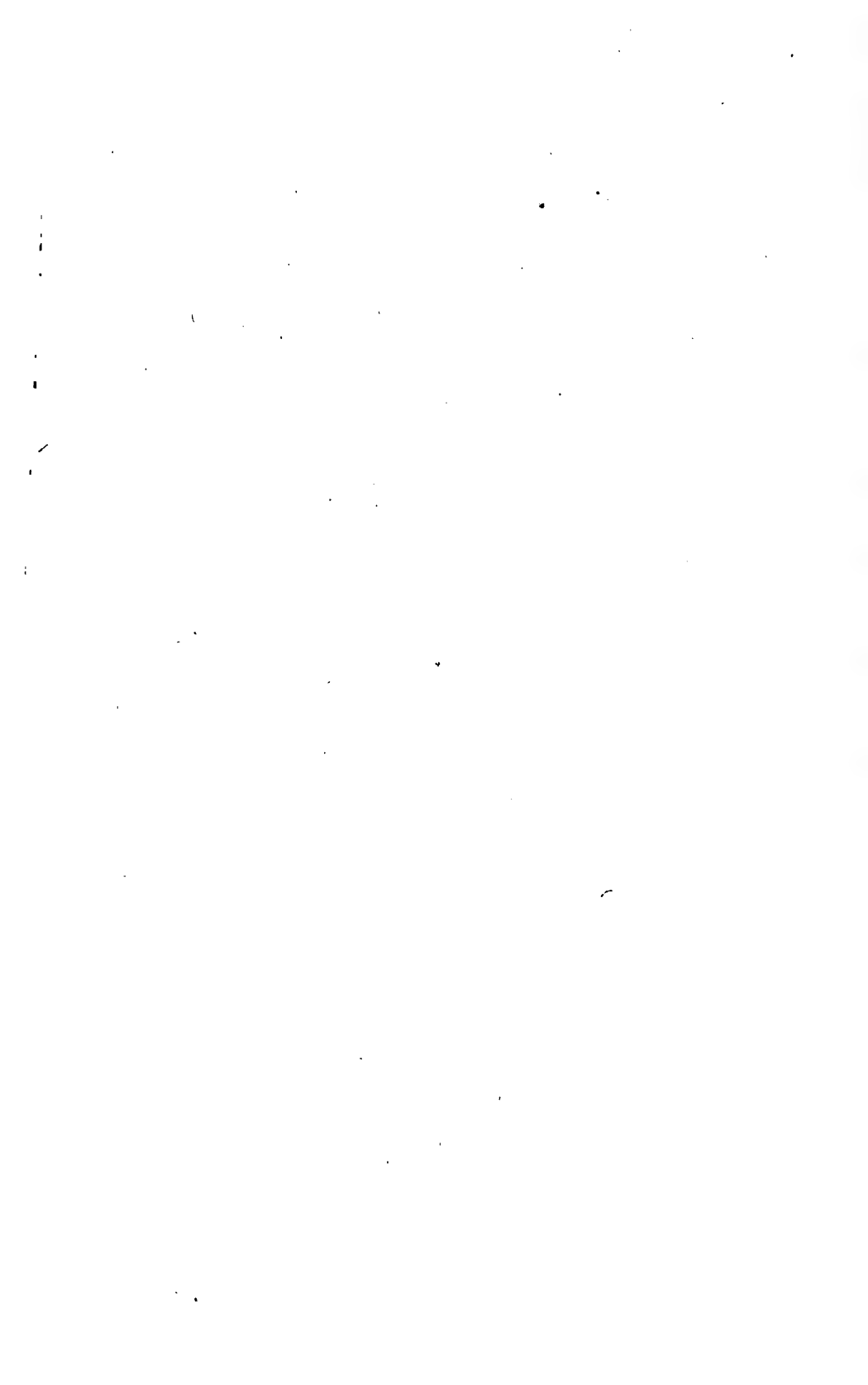
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